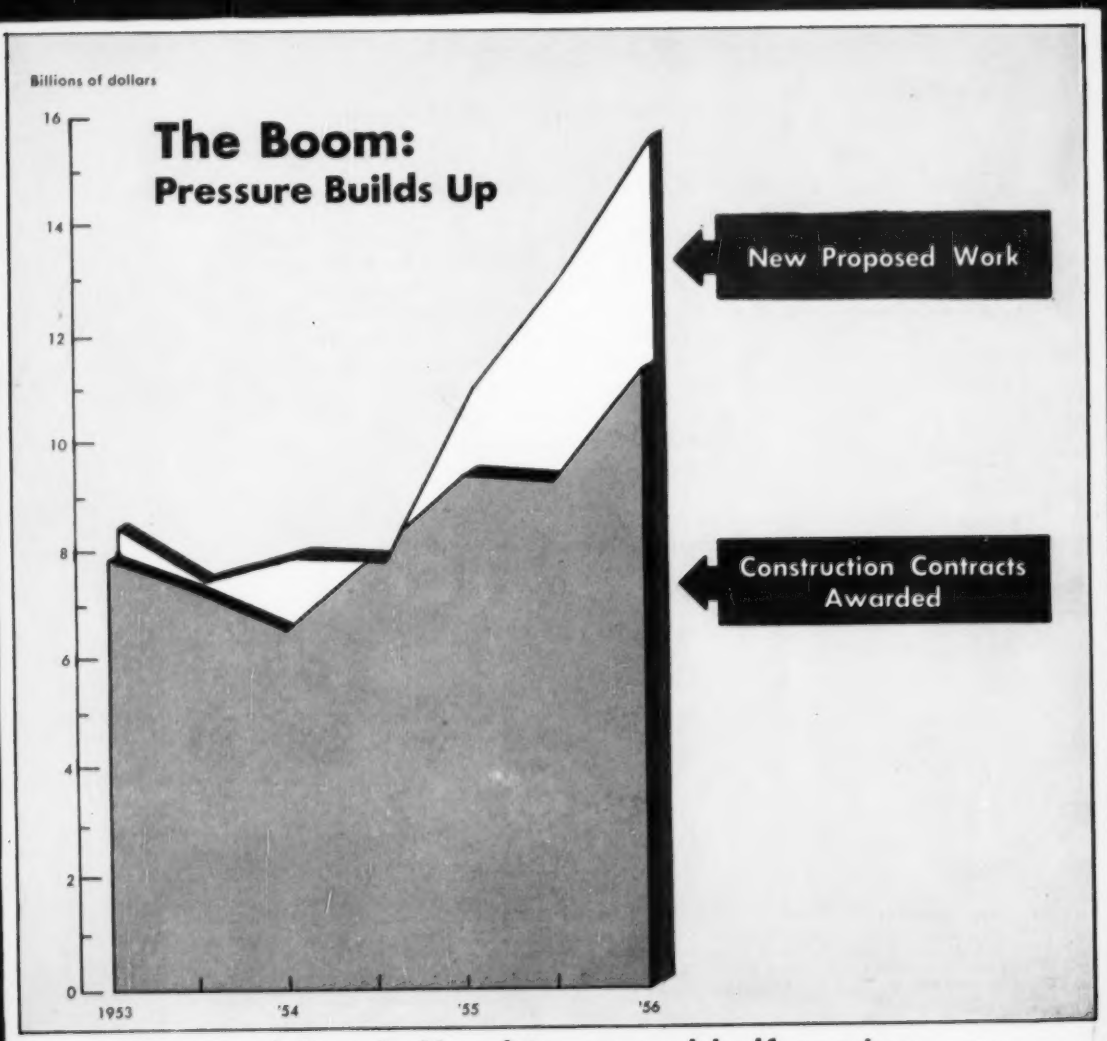
ENGINEERING NEWS-RECORD

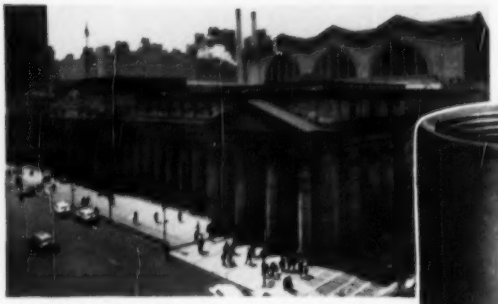


A record first half, a big second half coming p. 21

A McGRAW-HILL PUBLICATION

E B POWER GS N
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

1899 Wrought iron pipe was installed in City Hall in 1899. Services: steam returns, soil, waste and vents, and cold water piping 4" and over.



1910 Pennsylvania Station was built in 1910. Wrought iron pipe was installed in steam supply lines, soil, waste, vents, leaders, and cold water lines.

These New York City buildings tell an important story about Wrought Iron Pipe *cost-per-year*

Because *cost-per-year* is the only logical guide to economical pipe selection, service-life records are a vital factor.

What about wrought iron pipe *cost-per-year?* A typical answer is found in the service-life records illustrated by these New York City buildings. The maintenance-free operation provided by wrought iron since installation date is a dependable index to the material's lower cost-per-year of service.

If you are planning a new building, our bulletin, *Piping for Permanence*, will help you with any questions you have about wrought iron pipe, and its ability to save because it serves longer. Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y. *Available throughout the world.*

1912 Woolworth Building, 1912. Wrought iron pipe in soil, waste, vents, some cold water risers, branch lines, and steam supply, condensate returns.

1931 Irving Trust Company Building was built in 1931. Wrought iron pipe was installed in the steam return lines and all vents.

1913 Municipal Building was built in 1913. Wrought iron pipe installed in steam returns, soil, waste and vents, and cold water piping 4" and over.

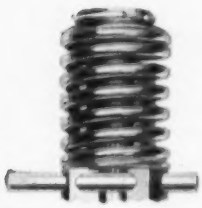
BYERS ***Wrought Iron Tubular and Hot Rolled Products***

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

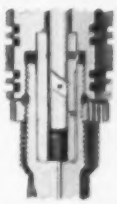
This is the *COMPLETE* fuel injection system of a *MURPHY DIESEL*.....

Here is the simplest, most effective diesel fuel system ever developed—the Murphy Diesel Unit Fuel Injection System. A low pressure fuel supply pump serving a unit fuel injector for each cylinder is all there is to it. There is no master high pressure pump. There are no high pressure fuel lines. On the rare occasions when service is necessary, just put in the spare injector and have the removed injector serviced at your convenience. But most important of all, the Murphy Unit Injector in combination with "true" diesel operation enables you to get more work out of every gallon of fuel . . . better performance at lower cost.

SIMPLE . . . DEPENDABLE . . . ECONOMICAL

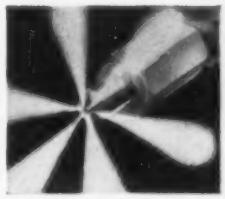


Injector drive is direct from the overhead camshaft by means of a rocker arm. Precision rack and pinion actuated by hydraulic servo type governor controls the amount of fuel to be injected.



Fuel enters the injector at approximately 20 psi, travels through an annular passage into the injector cylinder. No priming —no bleeding.

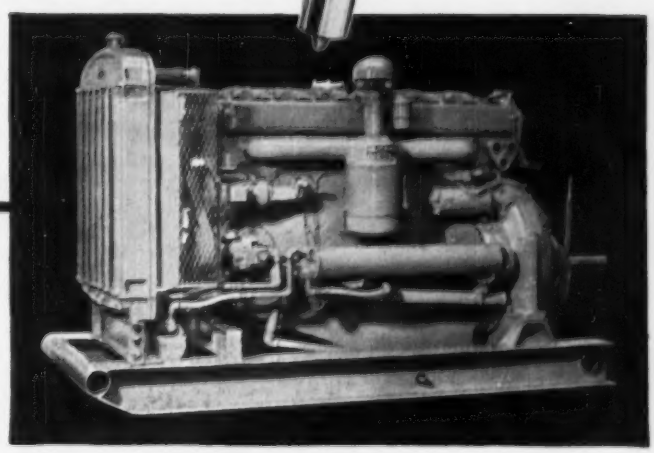
On the plunger's downstroke, the intake port is closed and the fuel forced out the nozzle through dual flat seat check valves — **double** protection.



Solid fuel forced through six properly sized holes in the nozzle is completely atomized as a fine fog and distributed through the incandescent air charge to provide thorough combustion.

HERE'S HOW YOU BENEFIT

- Eliminates long high-pressure fuel lines
- Eliminates pre-combustion chambers, energy cells or hot spots
- Prevents erratic, irregular injection
- Eliminates priming or bleeding
- Stops after-dribble or leakage
- Eliminates elaborate injector adjusting equipment
- Eliminates maintenance of separate components
- Easier starting
- Greater economy
- Smoother operation
- More power
- Less fuel consumption
- Lower maintenance
- Less down time



MURPHY DIESEL

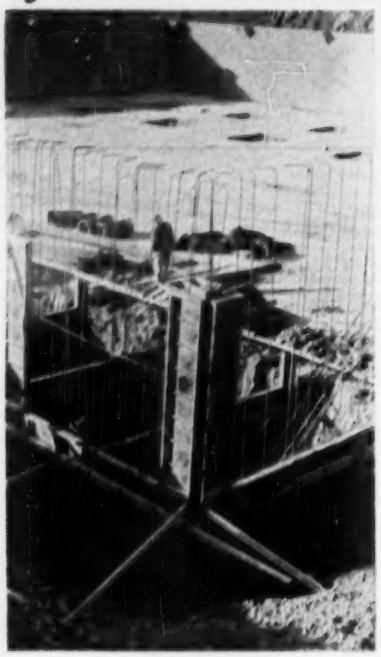
341

MURPHY DIESEL COMPANY

5321 W. Burnham St. Milwaukee 14, Wisconsin

Heavy duty engines and power units, 96 to 264 H.P., generator sets 64 to 165 K.W.

Symons FIELD REPORT...



Contractor Saves 40% with Symons Forms . . .

7,500 square feet of Symons Standard Forms were used in the new 2 million gallon capacity pumping station at Melrose Park, Illinois. 2,000 cubic yards of concrete were used on the job and the concrete contractor, Louis Macro Company, Melrose Park, reported a 40 per cent saving through the use of Symons Forms. Walls for the job were completed in three pours.

Symons engineering service can help you realize substantial savings in forming. With your plans, our engineers will prepare a complete form layout, bill of materials, and make recommendations for the most efficient and cost saving method of forming.

Our field service representatives are sales engineers, ready and able to advise you on form erection, pouring and stripping methods that will help you save time, labor and materials. You can call on them to assist you on any forming problems.

Symons Forms can be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. G-6, Chicago 39, Illinois.

Sam Cerniglia Company, Melrose Park, Illinois
General Contractor.

Catalogs and Added Information on
FORMS—CLAMPS—SHORES
Sent on Request

ENGINEERING NEWS-RECORD

EIGHTY-SECOND YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600;
Washington - REpublic 7-6630

Waldo G. Bowman, Editor

Highways, Airports—Transportation

Eugene E. Halmos, Jr., *Senior Editor*
John B. Owen, Barbara Lamb

Buildings, Bridges—Structures

Frederick S. Merritt, *Senior Editor*
Edward R. Wood, James B. Sullivan

Rivers, Sanitation—Water Use

Arthur J. Fox, Jr., *Senior Editor*
Howard Jacoby

Finance, Labor—Management

Clyde C. Henning, *Associate Editor*
Charles J. Harding, John Flanagan

Regional Editors

J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy, Presentation—Production

John J. Christie, *Senior Editor*
Stanley C. Jensen
Marcellino V. Leggiero
Harry W. Jensen, *Presentation*
Rachael Robinson, *Makeup*
John C. Greenough, *Printing*

Statistics, Prices, Costs—Business News

Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Loretta Felix,
Marion Sciorra, Florence Dembek
James Webber, *Economics*
Ruth I. Carlson, Marie Roessler, Evelyn Huber

Editorial Research and Indexing

Helen Rich
Eva Glerat, Rene Hay, Judith Feld
Patricia Witschger, Marianne Stern

Consulting Editors

Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Washington News Bureau, Room 1189 National Press Building; G. B. Bryant, Jr., *Manager*, Glen Bayless, A. E. Adams, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, William Gilmour, Sam Justice, Arthur J. Kraft, D. O. Loomis, Gladys Montgomery, A. L. Moore, Seth Payne, M. A. Reichek, Caroline Robertson, V. B. Smith.

Domestic News Bureaus: Atlanta, 801 Rhodes-Haverty Bldg., Pat Henry; **Cleveland**, 1510 Hanna Bldg., R. E. Cochran; **Detroit**, 856 Penobscot Bldg., J. C. Jones Jr.; **Houston**, 1303 Prundential Bldg., J. A. Lee; **San Francisco**, 68 Post Street, M. C. Ralston; **Los Angeles**, 1125 W. Sixth St., John Shinn; **Seattle**, 6040 Fifth Ave., N.E., Ray Bloomberg.

Correspondents: Albany, Albuquerque, Augusta, Me., Austin, Boston, Boulder, Baltimore, Birmingham, Bismarck, Charleston (W. Va.), Charleston (S. C.), Columbus, Cincinnati, Cleveland, Chicago, Cheyenne, Dallas, Denver, Des Moines, Detroit, Durham, Harrisburg, Helena, Houston, Hartford, Indianapolis, Jackson, Miss., Jacksonville, Jefferson City, Kansas City, (Mo.), Lansing, Lincoln, Little Rock, Miami, Memphis, Minneapolis, Montgomery, Milwaukee, New Orleans, Norfolk, Omaha, Oklahoma City, Philadelphia, Pittsburgh, Portland (Ore.), Providence, Phoenix, Pierre, St. Louis, Schenectady, Springfield (Ill.), Syracuse, St. Paul, Seattle, Salt Lake City, Spokane, Topeka, Trenton, Wilmington. **Canada:** Montreal, Toronto, Ottawa, Victoria, Regina.

McGraw-Hill Economics Department: Dexter M. Keezer, director; W. H. Chartener

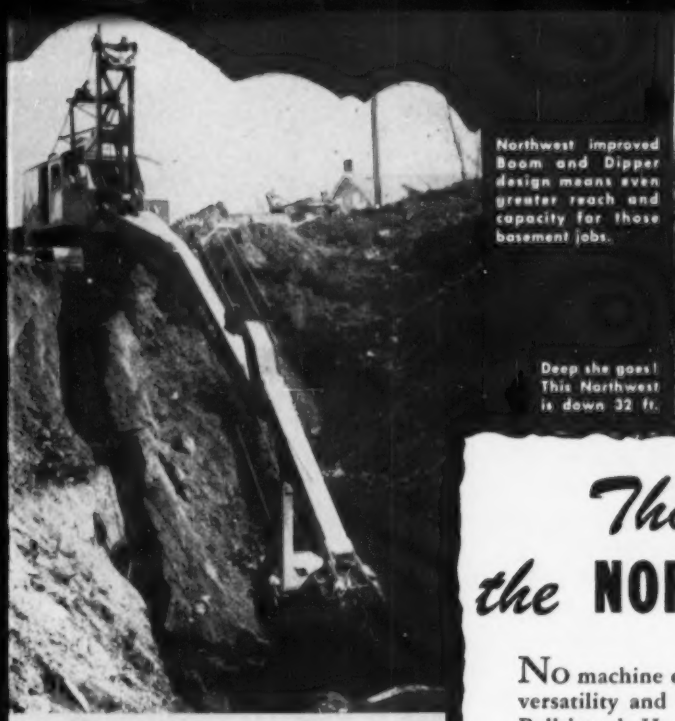
Foreign News Bureaus: Editor, John Wilhelm, **New York**; G. W. Schroder, **Bonn**; Sharokh Sabavala, **Bombay**; William J. Coughlin, **London**; John H. Kearney, **Mexico City**; John O. Coppock, **Paris**; Dan Kurzman, **Tokyo**; Peter Weaver, **Rio de Janeiro. Correspondents:** Amsterdam, Athens, Bangkok, Bogota, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran and 21 other principal cities and countries.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD Vol. 157, No. 2, July 12, 1956

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. **Executive, Editorial, Advertising and Subscription Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 North Broadway, Albany 1, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director. **SUBSCRIPTIONS:** Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address. Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. **Position and company connection must be indicated on subscription orders.** Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. **Canada** $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere and the Philippines, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Second class mail privileges authorized at Albany, New York. Printed in U. S. A.

Copyright 1956 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.



Northwest improved Boom and Dipper design means even greater reach and capacity for those basement jobs.

Deep she goes! This Northwest is down 32 ft.

That amazing machine— *the* NORTHWEST PULLSHOVEL!

No machine ever developed for excavation work has demonstrated more versatility and ability to make money for its owner than the Northwest Pullshovel. Having the advantage of being a pioneer rig of this design the Northwest Pullshovel has reached a higher state of development and efficiency in operation than other similar equipment.

Northwests have handled trench up to 32-ft. deep. They have proved themselves in tough rock digging. They set pipe! Trim bank! Handle basement excavation without getting in the hole. They have even handled road grading.

Versatility like this means money in your pocket. Plan now for your next Northwest. There is a size for your job.

NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

P80-3-LCG

Dig the trench and set the pipe with one rig.

Model 25 cuts the trench and digs the bell holes in the same operation.

Trimming bank on a bridge approach saved time and money.

An unusual Pullshovel job. A Northwest grades road.

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA ·

See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

AMERICAN ROAD BUILDERS ASSOCIATION

· PRODUCTION PLUS · $ · MEANS MONEY ·

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

How contractors benefit by

TEXACO SIMPLIFIED LUBRICATION PLAN

HERE'S ONE EXAMPLE. All equipment used in the construction of Hungry Horse Dam, Montana, was 100 per cent Texaco-lubricated. The contractor wrote:

> **"The time and confusion saved by the Texaco Simplified Lubrication Plan are incalculable. Not only is it more economical to use a small number of lubricants, but there is little chance of error in application ...a big factor in keeping our equipment on the job and our maintenance costs low."**

The Texaco Simplified Lubrication Plan is adaptable to all types of heavy construction jobs and working conditions. The lubricants recommended may vary, but the object is always to confine *all* major lubrication to *no more than six* products. For example:

1. ENGINE LUBRICATION: Use one of the famous *Texaco Ursa Oils*—especially designed to make diesel and heavy duty gasoline engines deliver *more power* with *less fuel* and *fewer overhauls.*

2. CHASSIS LUBRICATION: Use *Texaco Marfak.* It won't jar or squeeze out, gives longer lasting protection against dirt, wear and rust.

3. WHEEL BEARING LUBRICATION: Use *Texaco Marfak Heavy Duty.* It seals out dirt and moisture, seals itself in—assuring safer braking, longer bearing life. No seasonal change required.

4. CRAWLER TRACK LUBRICATION: Use *Texaco Track Roll Lubricant.* It gives effective, lasting protection against dirt, water and wear.

5. AIR COMPRESSOR LUBRICATION: Use *Texaco Regal Oil R&O.* It keeps systems clean and efficient. Also ideal hydraulic fluid—prevents rust, sludge and foam.

6. ROCK DRILL LUBRICATION: Use *Texaco Rock Drill Lubricant EP.* It protects against wear... prevents rust whether drills are running or idle.

Enjoy the benefits of the Texaco Simplified Lubrication Plan on your next project. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

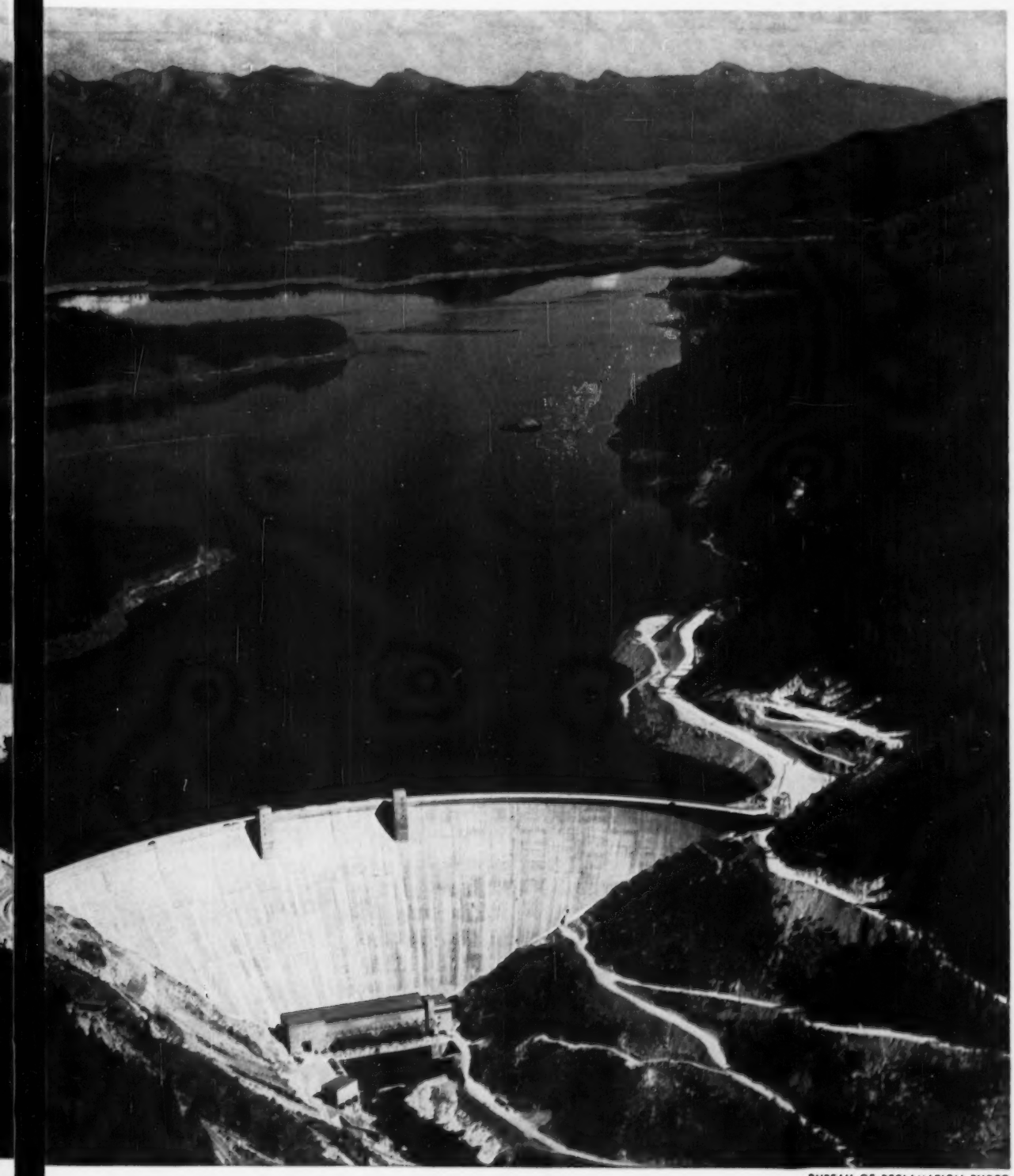
☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Hungry Horse Dam and Power Plant, Hungry Horse, Montana. Dam is 564 feet high, 2,115 feet long at the crest and contains more than 3,000,000 cu. yds. of concrete. Four generator units have a combined capacity of 285,000 kilowatts. Texaco Simplified Lubrication Plan aided on-schedule completion.

TEXACO

TEXACO

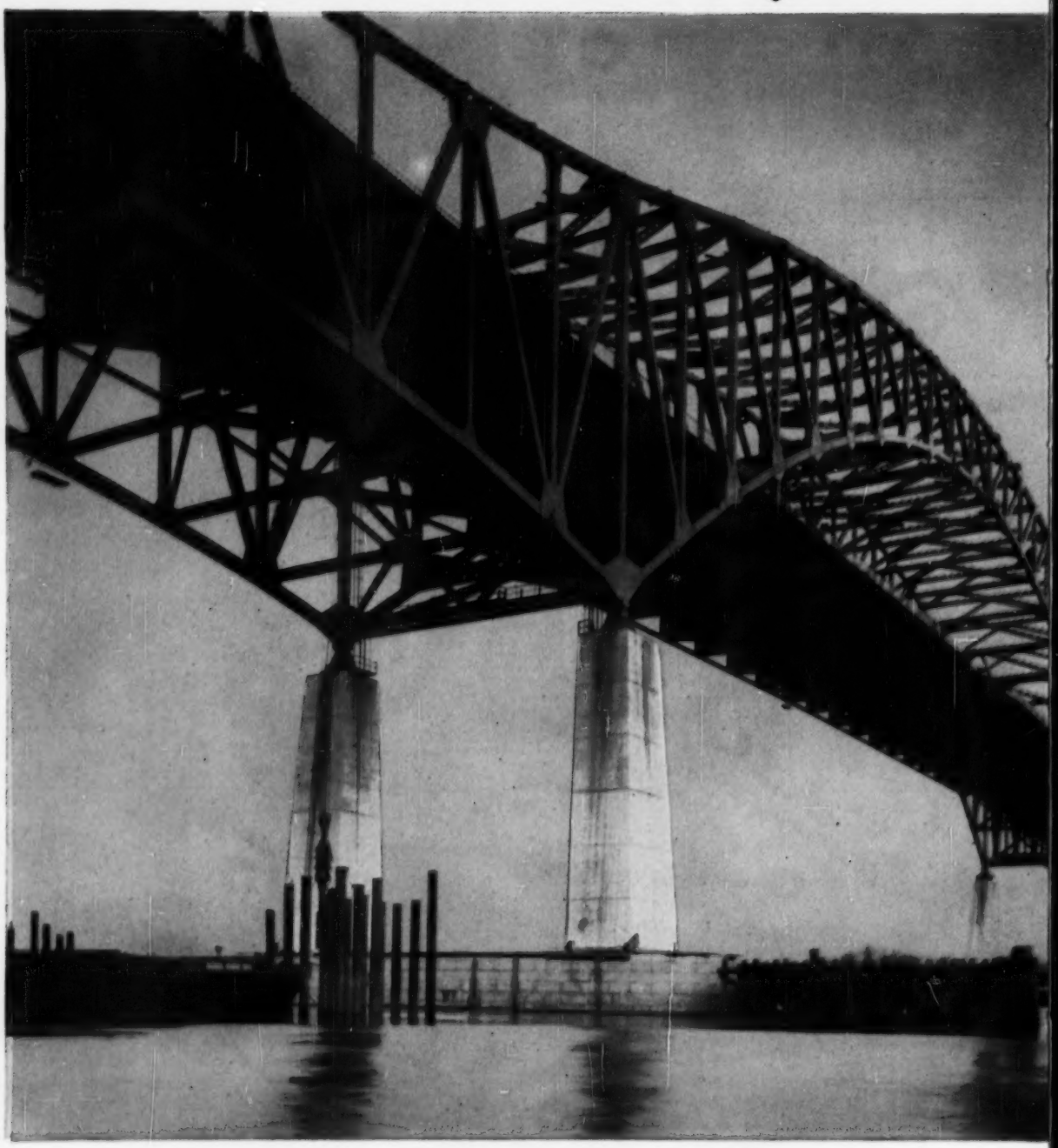


BUREAU OF RECLAMATION PHOTO

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

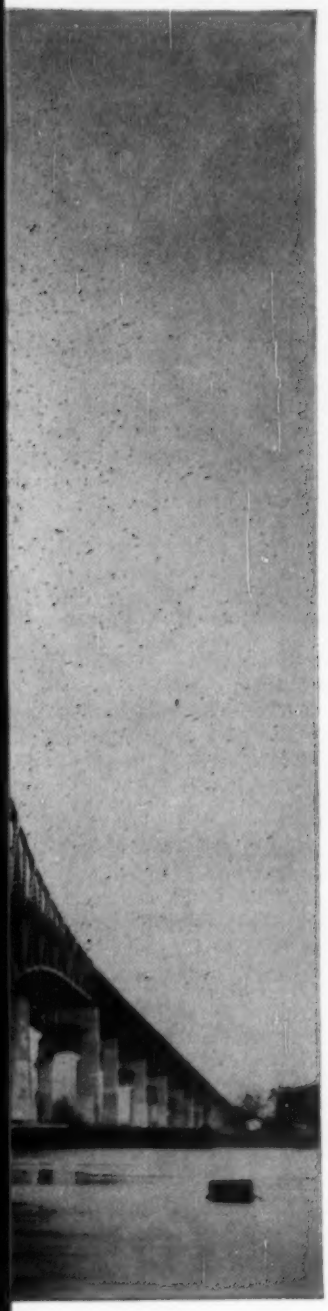
Another important bridge **built**



USS HIGH STRENGTH STEELS

—the big step forward in bridge construction

better with USS High Strength Steel



11,070 tons of USS MAN-TEN Steel ensure maximum strength and durability

BUILT at a cost of $16,000,000, this new toll bridge over the Delaware River between Edgely, Pa., and Florence, N.J., connects the Pennsylvania and New Jersey Turnpikes and completes the last gap in the east-west vehicular express route from New York City to the Indiana State line. A mile and a quarter long, its 76'6" roadway provides six lanes of traffic.

The graceful superstructure is dominated by a three-span continuous truss bridge with tied-arch main span, consisting of two 341-ft. side spans, and a 682-ft. center span which rises 270 ft. above the shipping channel to provide a roadway level with a vertical clearance of 135 feet at the center of the main span.

20,144 tons of structural steel were used in the superstructure. 11,070 tons of this are USS MAN-TEN (A242) steel—the largest tonnage of high strength steel used in a bridge structure to date.

USS MAN-TEN (A242) Steel was used for the main stress-carrying members of all spans, trusses and approaches because of its favorable strength/cost ratio.

If you are looking for superior materials of construction with which you can (1) obtain greater strength with no increase in weight, (2) reduce weight without any sacrifice in strength, (3) insure greater durability, and (4) frequently reduce in-place cost, we will be glad to discuss these advantages of USS High Strength Steels with you.

You will find our 174-page "Design Manual for High Strength Steels" extremely useful in applying USS MAN-TEN and our other famous high strength steels, USS TRI-TEN "E" and USS COR-TEN, to your designs. For free copy write—on your company letterhead—to United States Steel, Room 5452, 525 William Penn Place, Pittsburgh 30, Pa.

• • •

The Delaware River Turnpike Bridge will be operated jointly by the Pennsylvania Turnpike Commission and the New Jersey Turnpike Authority. It was designed by George S. Richardson, Pittsburgh, Pa.; was fabricated and erected by American Bridge Division of United States Steel.

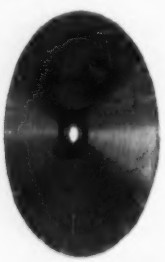
UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

Champion Offers NEW CONCRETE CUTTING EQUIPMENT . . .

Powerful direct chain drive eliminates slippage and maintains constant torque on Champion's new 36 h.p. concrete saw. This unit also has a revolutionary new type clutch — plus a host of other features you'll want to know about.

Tungsten Carbide diamond blades, by Champion, have an extremely tough bond that generally causes them to outlast ordinary diamond blades 2½ to 1. Contractors everywhere are trying this blade with great success.



When speed of cut is of top importance, contractors choose Champion concrete cutting diamond blades. Available in several specifications. Your dealer can help you select the proper blades for the aggregate you want to cut.

Use this coupon to send for more information.

Champion Manufacturing Company
2028 Washington Avenue
St. Louis 3, Missouri

Please send more information about

- ☐ 36 h.p. Concrete Saw
- ☐ Tungsten Carbide Blades
- ☐ Diamond Blades

Name_____

Address_____

City & State_____ 2

Reader Comment

On ENR's Conference

SIR—The conference on federal aid for sewage works construction brought to memory several radio programs in which I appeared in the interest of low interest rate revenue bonds to be purchased or guaranteed by the federal government to aid in the financing of sewage works construction.

Considerable interest was generated through these programs. The idea would have eliminated need for federal grants in aid and yet provide assistance. This interest later gave way to those advocating grant-in-aid notwithstanding the greatest prosperity this country has ever known.

There are undoubtedly other methods of federal assistance, except grants-in-aid, that will accomplish the same purpose. How about hearing of them through your paper?

MAURICE L. MILLER
Consulting Engineer
Louisville, Ky.

SIR—Your St. Louis conference struck me as an extremely important contribution to the clarification of issues inherent in this whole question of how best to raise the level of construction of pollution abatement works. As was so clearly brought out, there are very sharp differences of opinion as to the merits of federal financial assistance. It will probably be some time before this issue is resolved to everyone's satisfaction.

Aside from the construction grants question, it is gratifying to find such a wide area of agreement on the need for reducing pollution of the nation's water resources.

M. D. HOLLIS
Assistant Surgeon General
U. S. Public Health Service

SIR—I was extremely interested in reading the article and the editorial in the June 7 issue of ENR regarding federal aid for sewage works construction.

Being in urgent need to use the editorial, I have torn it from my copy of ENR. Would it be possible to have your office send me another copy of this issue?

JAMES H. ALLEN
Executive Secretary
Interstate Commission on the Delaware River Basin

SIR—Your practice of picking a subject for a very complete review, has been most commendable. Your most recent, "Federal Air For Sewerage Works", proved the most interesting.

The village in which I reside has only in the past year completed a sewerage system and treatment plant along with the necessary financing arrangements. So you see my neighbors and I are among the thousands of communities who have sought to take care of our own.

It seems to me that in discussing "federal aid" we overlook the facts as to where the money is derived. It is certainly no gift and can hardly be called a loan since it comes from our pockets in the form of additional taxes and comes back to us in a very limited amount. I would be very much surprised if the return is more than fifty cents on the dollar, and sometimes less.

One of the comments in the discussion was that if it cost Cincinnati $26 per capita to bring its system up to date and cost $48 per capita for Louisa, Ky., to take care of its needs that this was an unfair burden on Louisa, Ky. If these figures are solid costs then certainly we should be reimbursed by someone for spending $250 per capita.

Obviously we had to put in an entire system. And just as obviously the other cities mentioned were able to use some of their existing facilities, thereby reducing the costs of their improvements. But because we had not planned in the past is no reason that we should ask someone else to bear the burden.

I believe that two things would make water pollution control work. The first being that each community face its own responsibilities for its own acts and deeds. The second is that the federal governmental and state governmental groups stop bleeding the income from the smaller political subdivisions. I further believe that the several states should take steps to permit sound and adequate financing of the various cities and villages so that they may operate as self sustaining businesses on a business

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

A GOOD Machine Made BETTER

...THE 3/4 YARD LORAIN 25A

Now we call it the "25*A*" and it really is "Grade A" with its many new, profit-making improvements. It is even better than ever. A general-purpose ¾-yd. machine that is easily converted to shovel, crane, clamshell, dragline or hoe.

Read below some of the features this newest Lorain brings you. If you are interested especially in dragline or hoe work, read the many *additional* advantages at the right the new Lorain-25A has for you.

The swing clutches have been increased 20% in area for cooler, smoother clutch action and longer life—especially important for the constant wig-wag operation of dragline duty. New, smooth, easy Lorain "E-Z" controls on friction clutches. "Hydra-Ease" power control of crawler steering, tread lock, house lock and shifting of swing-travel jaw clutches. Hydraulic Coupling Power Take-off available with no-stall, no-shock, "never-say-die" application of power.

These are but a few of the important features that put the new Lorain-25A a step ahead in the general-purpose ¾-yd. class. There are many more—you should learn about *all* of them from your Thew-Lorain Distributor.

THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.

THEW LORAIN

NEW DRAGLINE FEATURES

- **New bucket boom.** Square-tubular-chord design. Lighter, stronger. Can use longer, lower booms. Increased operating ranges. Can work with bucket farther out.
- **New fairlead.** Swivel type. All 4 sheaves mounted on pre-lubricated, sealed, anti-friction bearings.
- **New, free-spinning action of drag-in drum.** Permits quicker release of drag-in cable for easier, smoother bucket casting — greater ranges.
- **New, removable shell lagging** of steel permits heavier, stronger drag-in cable for longer cable life, fewer shut-downs for cable replacement.

NEW HOE FEATURES

- **New, longer 19-ft. boom available.** Digs deeper. Increases work ranges. Tapered, gooseneck design for greater ranges, better operator visibility.
- **Greater choice of cutting widths.** 30", 36" and 40"
- **New, removable shell lagging** of steel permits heavier, stronger, drag-in cable for longer cable life, fewer shut-downs for cable replacement.
- **New, heavier hoe front end.** Can handle even the toughest digging. Crowds better into the hardest of materials.

Here are important facts for the "man behind the gun"

This White 18" Dumpy level has

...more of the features you want, yet costs you less!

Before you buy, compare this White Dumpy level with a similar model of any other recognized make. From every standpoint — design detail . . . quality construction . . . work-speeding, life-lengthening features and cost — you'll quickly see why a White's the best buy you can make. It will make your work faster, easier, more accurate. Check this comparison chart:

FEATURES	D. White No. 7080	Instrument A	Instrument B
Magnifying power of telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — complete with carrying case, tripod and accessories — F.O.B. factory	$315.00*	higher	higher

For complete details on the 18-in. Dumpy level and other equally fine engineering instruments, see your David White dealer, or write direct to DAVID WHITE CO., 317 W. Court Street, Milwaukee 12, Wisconsin.

DAVID WHITE COMPANY

We offer complete, expert repair service on all makes, all types of instruments.

**Price subject to change without notice.*

basis. That this should be done even though it may mean changes in many of the state constitutions. This would stop the necessity of federal aid.

JAMES F. ROOSE
Engineer and Surveyor
Ottawa, Ohio

SIR—We are all grateful to you for the very fine conference on federal aid for sewage works which was so well reported in the June 7 issue of your Engineering News-Record. The problem is a difficult one and a sound solution will be more likely because of the public discussion which you have reported.

SAMUEL A. GREELEY
Greeley and Hansen
Chicago, Ill.

SIR—It is my belief that ENR is performing a vital and necessary service in exploring this matter of federal aid, and I sincerely regret that it was impossible for me to participate in the meeting.

So that you may have the thinking of the California State Board on this subject, I shall comment briefly on the questions posed in your letter of invitation.

The board has consistently been opposed to federal loans or grants-in-aid for financing sewerage works. We believe that this is the responsibility of the states (and local agencies), and we believe that the record shows that the states are now accepting this financial responsibility. The California water pollution control program is based on the concept of the local, decentralized control, and we believe that this philosophy applies even more emphatically in federal-state relationships in this field. It is our opinion that federal construction grants would sooner or later lead to federal control. Furthermore, we feel that a federal-aid program favors the community which has failed to meet its sewerage responsibilities, and penalizes those which have met their obligations.

The state board believes that federal aid in the field of water pollution control should be limited to research, and that there is a definite need for an intensified federal research program in this field. The board also has supported federal legislation that would encourage industry to build waste treatment facilities by allowing cost of treatment works for abatement of water pollution to be amortized at an accelerated rate for income tax purposes.

VINTON W. BACON
Executive Officer
State Water Pollution Control Board
Sacramento, Calif.

Replacing the Inadequate

SIR—Four lost words in a statement by this office have resulted in an unhappy insult to five Ohio cities, and we beg indulgence for a correction.

Somehow the phrase "completely new plants replacing older inadequate plants" was shortened to "completely inadequate plants" with reference to the sewage treatment facilities of the Ohio cities of Canton, Kent, Shelby, Jackson and Wadsworth in a news release which was picked up by your correspondent here. I can assure you it was not his fault. The five cities in the last four years actually have spent over $5 million for new and adequate sewage treatment plants. We are proud of them, and do not want to see them cited for inadequacy now.

We are very happy that you saw fit to run a story on Ohio's progress against water pollution (ENR June 14, p. 28). We hope that Ohio will continue to make rapid progress.

ART ROBINSON,
Director of Public Relations,
Ohio Water Pollution Control Board.

Stuff Dreams Are Made Of

SIR—The "Dambuilders' Dream" on the Yukon River in Alaska (ENR May 17, p. 21) could be a nightmare. The Rampart site was included in the comprehensive studies made by the Bureau of Reclamation in 1948. On the basis of preliminary hydrologic and topographic data it was determined that it would take some 75 years to fill the reservoir with all of the basin's water flowing into it. There were concurrent studies on the transmountain diversion of the Upper Yukon River for power development near Skagway. This would have extended the 75 years considerably.

The Rampart site, thus, is more a publicity man's dream than a dambuilders' dream. Of course, the dam can be built in stages such that future generations can commend the foresight of this generation. But it looks like some of the other sites covered in the Bureau of Reclamation report should receive earlier attention.

ADE E. JASKAR
Tippetts-Abbett-McCarthy-Stratton
Ankara, Turkey

CALENDAR

Society for Experimental Stress Analysis, annual meeting and exhibit, Deshler-Hilton Hotel, Columbus, Ohio, Nov. 1-2.

Noise Abatement Symposium, seventh annual meeting, Hotel Sherman, Chicago, Ill., Oct. 11-12.

Photos taken at the new home of the **Durethene Corporation,** Chicago 50, Ill.

The 67,000 square foot concrete floor of the new home for Durethene Corporation shows the three steps in using a polyethylene moisture barrier. In the foreground, the area has been graded. In the middle, polyethylene has been laid out in preparation for the wire mesh. Towards the far wall, concrete is being poured and given a preliminary finish. Film by Durethene Corp.

They use moisture barrier of polyethylene film . . .

"Now we get 100% curing action!"

"Prior to the use of polyethylene, concrete had to be kept wet after pouring as an aid to the curing process. Failure to do this led to drying and cracking. With polyethylene acting as a moisture barrier, we now get a 100% curing action due to its positive moisture retention qualities." That's the report from Daniel Carlson, Construction Superintendent for Campbell, Lowrie and Lautermilch, general contractors of Chicago, Illinois.

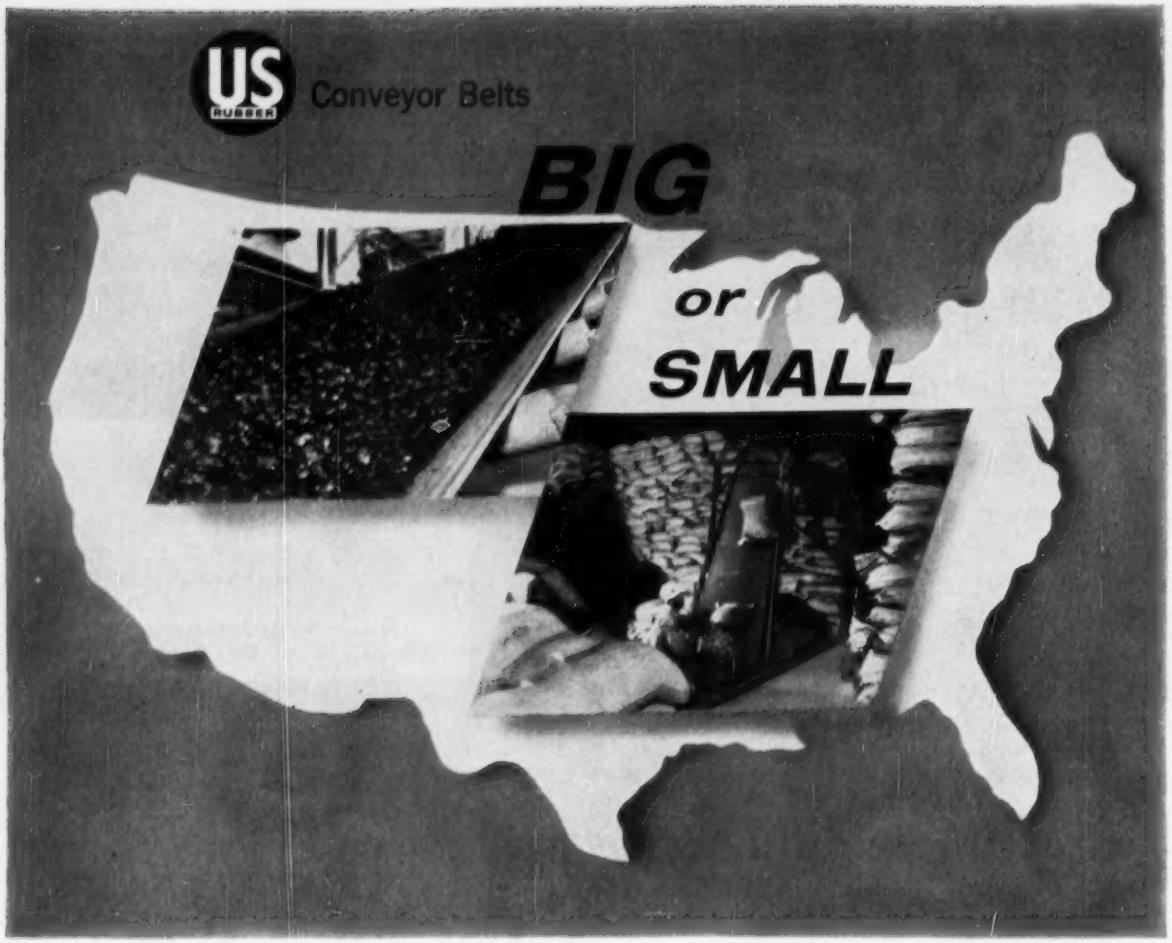
"In addition," Carlson said, "we get a better set to the concrete floor, smoother surface, and exceed our previous testing requirements. Polyethylene has reduced our moisture barrier laying time by half because it is lightweight, tough and easy to handle."

More and more engineers and builders are turning to film of BAKELITE Brand Polyethylene for a variety of moisture barrier applications . . . for protecting materials and equipment from weather. Why not find out about using film made of BAKELITE Brand Polyethylene on your next job. Today, write Dept. SC-49.

It pays to specify film made of . . .

BAKELITE
BRAND
Polyethylene Plastic

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.
In Canada: Bakelite Company, Division of Union Carbide Canada Limited, Belleville, Ontario
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC



make the nearest "U. S." Sales Office your port of call!

Whatever your conveyor belt needs may be—your convenient "U. S." District Sales Office is your supply point. Here's what it offers:

- The most complete line of belts available
- Fast delivery
- Expert splicing service
- Belt engineering and conveyor design help
- A no-obligation survey of your belting needs

The "U. S." belting engineer will show you the unique "U. S." conveyor belt kit which enables him to build, right before your eyes, a miniature sample of the right type and size of belt to fit your needs.

So whether you're involved with long hauls and heavy loads of ore, oats, or aggregate—or small distances and light weights, such as peas, packages or parts—contact any of the "U. S." offices listed below. Or write us at Rockefeller Center, New York 20, N. Y.

Atlanta, Ga.
999 Lee Street, S.W.

Baltimore 5, Md.
500 N. North Point Road

Boston 6, Mass.
560 Atlantic Avenue

Buffalo 3, N. Y.
133 East Swan Street

Charleston, W. Va.
706 Morris St. at Smith St.

Chicago 32, Ill.
4135 South Pulaski Rd.

Cincinnati 37, Ohio
4921 Para Drive

Cleveland 3, Ohio
7208 Euclid Avenue

Dallas 9, Texas
6125 Forest Street

Denver, Colo.
4800 Colorado Blvd.

Detroit, Mich.
2121 West Fort Street

Houston 20, Texas
5711 Armour Drive

North Kansas City 16, Mo.
16th and Swift Avenues

Los Angeles 58, Calif.
Soto & E. 46th St.

Milwaukee, Wis.
1314 North Seventh St.

Minneapolis 1, Minn.
400 Second Avenue, N.

New Orleans 25, La.
900 S. Jefferson Davis Parkway

New York 13, N. Y.
191 Hudson Street

Odessa, Texas
912 North Grant Avenue

Oklahoma City 5, Okla.
425 E. Hill St.

Omaha 3, Neb.
4469 Farnam Street

Philadelphia 6, Pa.
5th and Locust Streets

Pittsburgh 12, Pa.
101 Sandusky Street

Portland 9, Ore.
630 N. W. 10th Avenue

St. Louis 2, Mo.
305 South Broadway

Salt Lake City 11, Utah
160 Social Hall Ave.

San Francisco 24, Calif.
6025 Third Street

Tulsa 4, Okla.
1132 South Lewis Avenue

US RUBBER

Mechanical Goods Division

United States Rubber

250-300 TONS HOURLY

of ⅞″ or 1½″ — crushing hard and abrasive trap rock

(above) 5-ft. x 12-ft. Heavy-Duty Scalper; 489-S and 48-FC Coarse Bowl Gyraspheres

(below) 5-ft. x 12-ft. Vibro-King Screen; 48-FC Medium Bowl Gyrasphere Crusher

with TELSMITH EQUIPMENT

in the plant of NELLO L. TEER

● This quarry plant, at Savage, Maryland, is owned and operated by Nello L. Teer, of Durham, North Carolina, a long-time user of Telsmith in other plants. Crushing hard and abrasive trap rock, this plant's product is mostly used for black top. When producing minus 1½″ material, average capacity has been between 270 and 320 tons per hour; producing minus ⅞″, the average is 240 to 270 tons per hour.

Send For Bulletin 266

TELSMITH Equipment in this Plant:

42″ x 14′ Heavy-Duty Apron Feeder (top right) • 36″ x 6′ Plate Feeder (under surge pile) • 489-S Gyrasphere Crusher • 5′ x 12′ 2-deck Heavy-Duty Scalper • 48-FC Coarse Bowl Gyrasphere Crusher • 5′ x 12′ 3-deck Vibro-King Screen • 48-FC Medium Bowl Gyrasphere Crusher • Five conveyors—three 30″, one 24″ and one 18″ wide.

Q-33

SMITH ENGINEERING WORKS

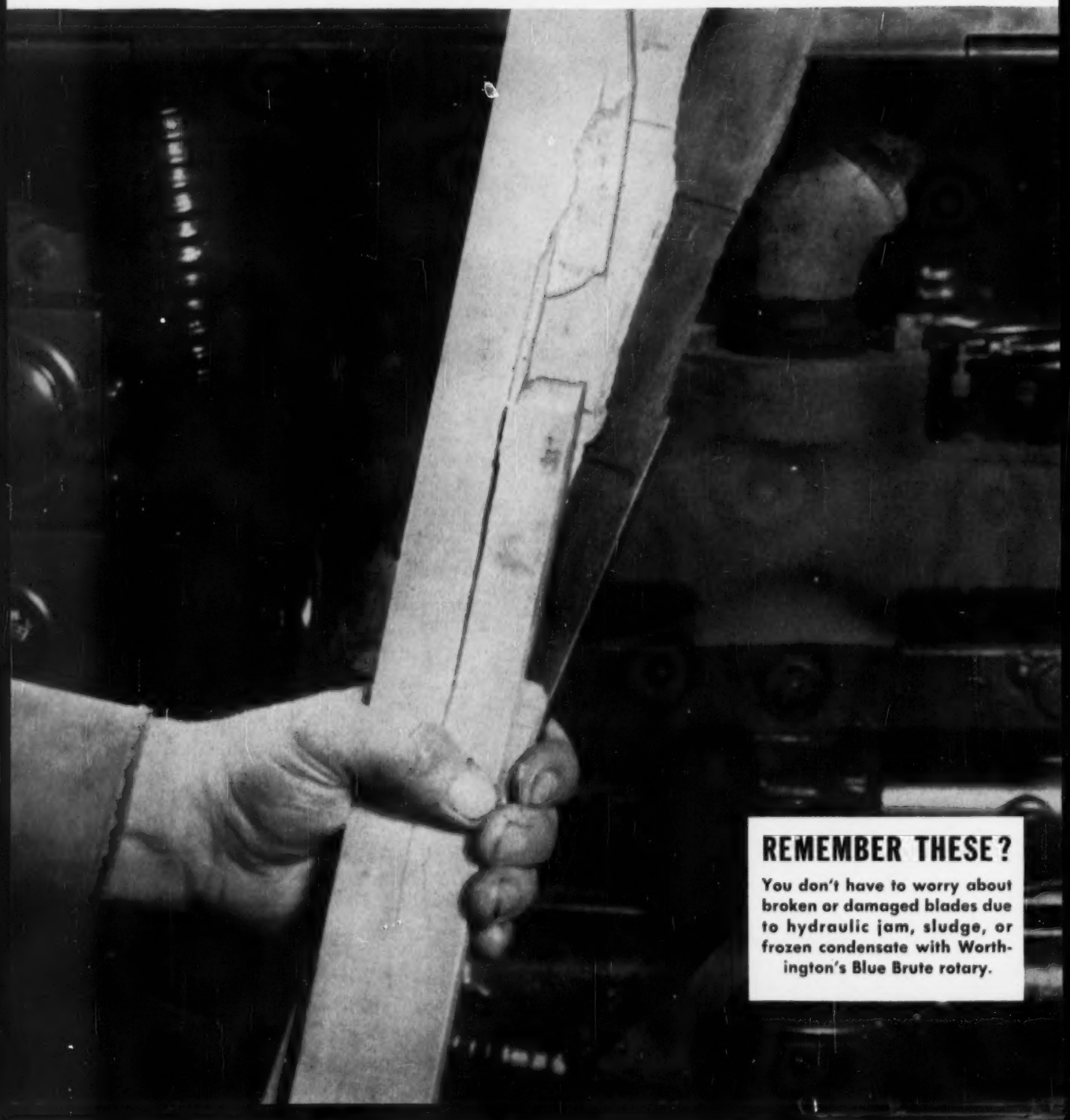
500 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Songworks, Milwaukee

With self-draining compressor...

BLUE BRUTE rotary

Eliminates blade damage due to sludge,



REMEMBER THESE?

You don't have to worry about broken or damaged blades due to hydraulic jam, sludge, or frozen condensate with Worthington's Blue Brute rotary.

BLUE BRUTE SIZES: 125′, 210′, 315′ AND 600′

bans blade damage!

frozen condensate or hydraulic lock

A big headache in portable rotary compressors can be trapped oil and condensate that accumulate in cylinder low spots during shutdown.

This trapped oil damages rotor blades on starts—particularly in cold weather.

Worthington engineers designed this headache right out of existence in the Blue Brute rotary. A unique double-deck arrangement of first- and second-stage cylinders, together with the location of the suction and discharge, does away with low spots in the cylinders.

Result: full gravity drainage of all oil from the cylinders and interstage chamber on shutdown. No hydraulic jam can form to damage blades on starts. What's more, no sludge deposits or gummy residues can settle out of oil on working parts to impair performance.

And the self-draining compressor design is only *one* of the features that make for the Blue Brute rotary's outstanding performance.

Clutch for easy starting

Take the Blue Brute's clutch. You never have to worry about cold-weather starts, because this heavy-duty, disc-type clutch lets you start and warm up the engine *without* engaging the compressor. *And you preheat the compressor oil at the same time.*

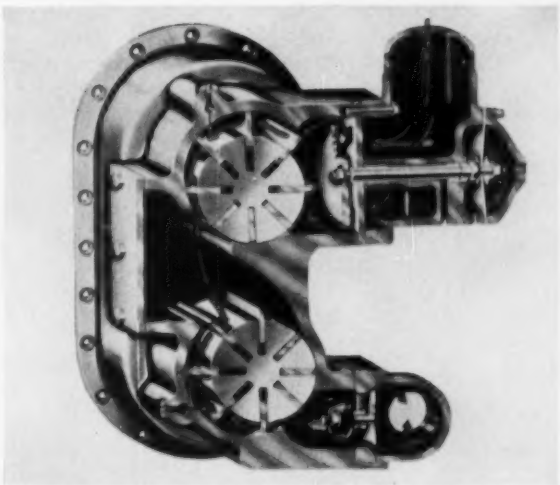
Warm water from the engine water jacket circulates through heating coils in the compressor oil reservoir to preheat the compressor oil. Engine water is automatically shut off when the compressor is placed in operation.

The Blue Brute's rugged, hydraulically operated clutch also acts as a "safety coupling" between the engine and compressor. And, in addition, it automatically compensates for any minor misalignment if it occurs.

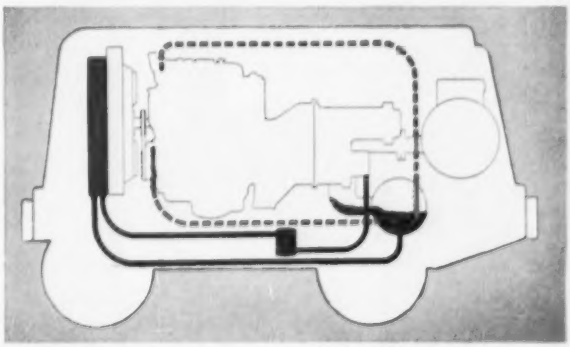
Complete Blue Brute line available

Get all the facts about the Blue Brute rotary compressor from your Blue Brute Distributor. Better yet—ask him to arrange a demonstration for you. There's a Blue Brute for every need—125′, 210′, 315′ and 600′ sizes on all standard mountings. You'll see why we say the Blue Brute rotary is the most flexible portable compressor on the market.

See your Blue Brute Distributor today! Or write Worthington Corporation, Section H.6.4, Harrison, N. J. H.6.4.



DOUBLE-DECK CYLINDER ARRANGEMENT allows full gravity oil drainage after shutdown. Arrows show air and oil flow. Old style, non-self-draining design *(not shown)* with in line cylinders, often trapped oil and condensate in cylinder low spots, often damaging blades on starts.

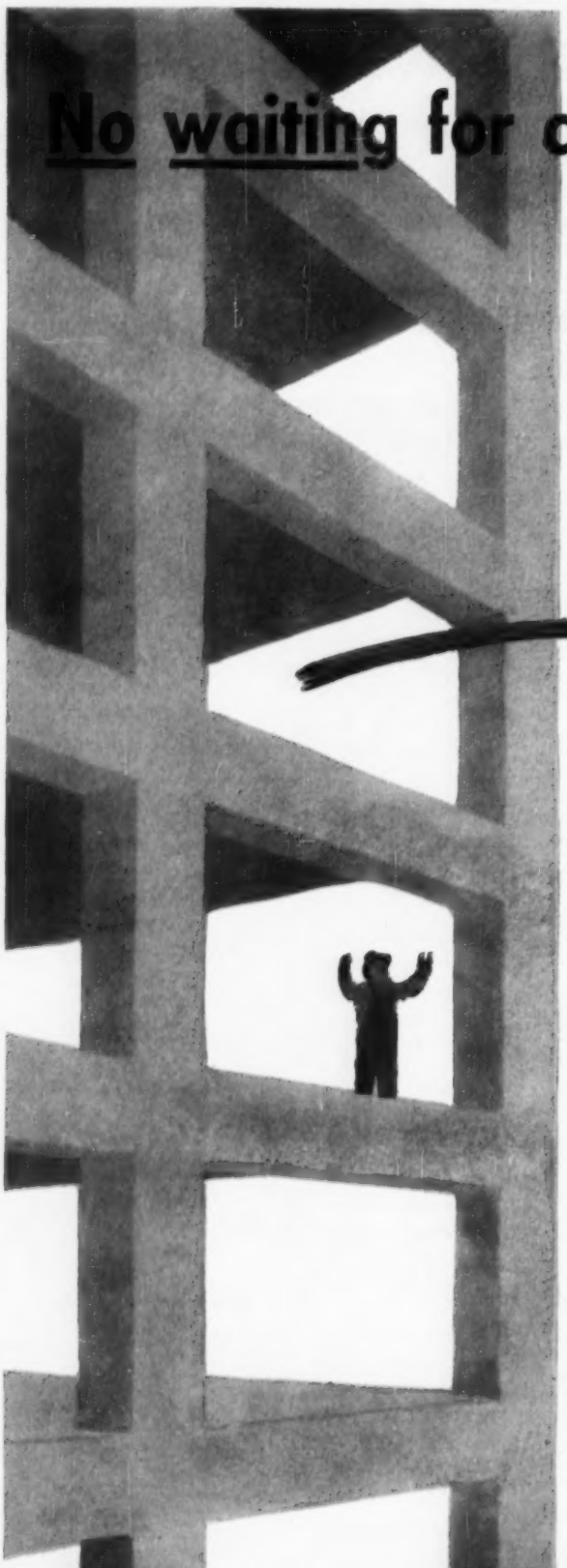


HOT WATER *(broken blue line)* from engine jacket passes through coils in oil reservoir to preheat oil *(solid blue line)* before clutch is engaged.

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A *BLUE BRUTE* JOB

CONTRACTORS' TOOLS • WAGON DRILLS • PORTABLE COMPRESSORS



No waiting for construction steel

when you build with Ryerson re-bars

Your construction plans can go forward unhampered by steel shortages when you build with reinforced concrete and depend on Ryerson for fabricated reinforcing steel.

Ryerson stocks of re-bars, accessories, wire mesh, etc., are ample to supply any building requirement—right now. Ryerson fabricating facilities are capable of meeting practically any delivery schedule. And, as evidenced by metropolitan sky-lines, architects and engineers are adapting reinforced concrete construction to increasingly wide use.

For example, we are currently supplying steel for the tallest flat slab reinforced concrete buildings ever built—29 stories high. And even taller steel and concrete buildings are planned for the immediate future.

You can depend on Ryerson for setting diagrams and bending details, too. So if you're planning to build, avoid delays by building with reinforced concrete—and send us your blueprints for lump sum or average pound price.

RYERSON STEEL

In Stock—Re-bars & Accessories • Spirals • Wire Mesh • Open Web Joists Forms for Concrete Joists • Tubing • Structurals • Safety Plate • Stainless Mansard Pattern Siding • Expanded Metal • Grating • Caisson Rings, Etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

ENGINEERING NEWS-RECORD

Vol. 157, No. 2 July 12, 1956

Number of copies printed this issue: 73,870

CONTENTS

NATIONAL AFFAIRS

A Brief Breather in the Boom 21
Center Planned for Building Industry 22
Consulting Engineers Form National Council 23
Detroit Expressways Ready to Go 23
Oklahoma Plans Link With Kansas Pike 23
Cause of Bridge Collapse Revealed 23
Prequalification Required for Bidders to Obtain Data 24
Authority to Limit Access Upheld 24
Tunnel Collapse Kills Two as Supports Fail 24
California Water Director Reveals Plan for Operation 25
Unused Pumping Station Faces Destruction 25
Massachusetts Turnpike: A Picture Progress Report 26
Five-Year, $6-Billion Public Works Plan for California 28
Columbia Valley Has Close Call 28

FEATURES

Electronic Computer: Top Tool in Highway Design 30
Welding Saved 350 Tons of Steel 38
The Army Unpackages Its A-Power 45

NEW PRODUCTS

Hand Tools Sink Concrete Studs Fast 51
New Type Pole Trailer 51
Three-Quarter Yard Bucket Added to Bucyrus-Erie Line 51
High Efficiency, Low Cost for New Centrifugal Fans 52
Cold Joint Sealing Machine Has Chopping Action Valve 52
Gradall Provides Extra Reach for Material Handling 54
Publications 56

INTERNATIONAL

Caracas Water Lifted 3,120 ft 61
France and Germany Agree on Moselle Canal Project 62

MEN AND JOBS

Wire Reinforcement Institute Names Top Officers 67
Capt. J. C. Tate Goes to Eighth Naval District .. 67
Kentucky Names Highway Commissioner 68
Nashville District Engineer Appointed 68

BUSINESS AND FINANCE

Construction Outlook for Second Half by Regions 105

LABOR

Labor Looks at Automation 110
Apprentice Program, Contest Wins Support 110
New York Plans Safety Conference 110
Right-to-Work Law in Louisiana Repealed 111
Michigan Jobless Benefits May Not Be Liberalized 111
AFL Would Close Loopholes 112
Labor Briefs 112

Reader Comment 8
Calendar 10
Washington Observer. 19
Obituaries 73
Unit Prices 74
Materials Prices 76
Construction Reports .. 78
Scoreboard 101
Editorials 128

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

TURNPIKE ISSUE REVIVED—Pennsylvania has appealed to the Bureau of Public Roads to include its main stem turnpike in the interstate highway system for purposes of federal aid. If successful, the state plans to seek Congressional action to permit federal-aid funds to be used for retiring bonds and thus turning the pike into a freeway. Although the new federal highway bill postponed a decision on the controversial question of reimbursing states for tollroads by providing for a study of the matter, Pennsylvania's Gov. George Leader apparently hopes to force the issue. The governor takes the position that "if the federal government makes the turnpike part of the interstate system then it assumes an obligation to help free it."

It was a different story up in Maine, though. A Portland newspaper says the state's Kittery-Augusta pike is too profitable a venture ever to be made free. The PORTLAND PRESS-HERALD notes that enabling legislation provided that upon retirement of bonds the turnpike goes to the state—but without the obligation to free it. After 1974, the newspaper points out, the state could pick up an annual revenue of $10 million by keeping tolls.

EDUCATION WITH TRAVEL—Colorado College has become the 24th school to enter an agreement with Carnegie Tech to cooperate on a five-year "3-2" plan of technical education. Students will take three years of liberal arts at Colorado and then go to Pittsburgh for two years of engineering or science at Tech. They'll get a B.A. degree from Colorado; a B.S. from Tech. The program is designed to give the engineering student more management and administrative potential.

BIGGER BOMBS, SMALLER BASES—Less elaborate tactical airbases for Western Europe will be built from here on out. SHAPE has decided the present 75-plane installations are too vulnerable to atomic bomb destruction. There were to have been 174 of these. Now the goal is 250 bases for 25 planes each consisting largely of a runway, with personnel housed in tents a minimum of six miles away.

DEATH RECALLS SHAKEDOWN—The contractors working on New York City's Delaware Aqueduct a decade ago have reason to remember James Bove, international vice-president of the Hod Carriers, Builders and Common Laborers Union. In concert with Joey Fay, boss of the Union of Operating Engineers, he worked a shakedown racket on them to the tune of some $700,000. Bove died in prison last month, and Fay was recently paroled. The fact that they could be convicted is worth a thought—just in case.

14.8 MILLION YARDS TO MOVE, 56 BRIDGES TO BUILD,

IN 29.6 MILE DALLAS-FORT WORTH "SIX-CHUTER"!

Unlike most other turnpikes, the 6-lane Lone Star Speedway is being cut, filled, borrowed and spanned along a populated route, crisscrossed by many heavily travelled roads. To add to contractors' headaches, up to 300,000 gallons of water a day have to be trucked in for compacting. Note how self-propelled scrapers are *tandemed* to tackle the sun-hardened soil. Tires are Goodyear's wide-base Hard Rock Lugs—now standard on much original equipment.

Tire maintenance in field helps construction men beat tight work schedule.

OTHER 3-T NYLON CORD TIRES—CONVENTIONAL OR TUBELESS!

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

End tube and flap troubles FOREVER!

Specify Goodyear 3-T NYLON CORD *TUBELESS TIRES* on new equipment of every size!

Goodyear tubeless tires and rims are now *standard* on foremost original equipment—or supplied on specification.

In them, you get the regular Goodyear cost-cutting features PLUS many *new* savings of time, trouble and tire-cost-per-yard, possible only with Goodyear TUBELESS.

TO MENTION JUST A FEW: No tube or flap troubles—no tube replacements—easier mounting and dismounting—airtight assembly—cooler running—slow leaks instead of blowouts—easier repairs—simpler, re-usable valve-parts.

Get all the facts from your helpful Goodyear dealer. Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Road Lug, Sure-Grip, All-Weather—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

WASHINGTON OBSERVER

Congress has approved all the military construction Eisenhower asked for in the authorization bill about to be sent to the White House. The projects approved would total an estimated $2.1 billion to build. This includes $200 million for a dozen new stripped-down satellite bases to disperse B-52 strategic bombers around main bases (see page 17).

•

New money needed to back up this military program—some $1.4 billion—has been voted by the House Appropriations Committee. They too gave the Administration everything it asked; neither the House nor the Senate is expected to make any cuts. In fact, they'll have to approve money for the satellite bases, for instance, that isn't in the present bill. While voting the money, though, the committee had some things to say:

It takes months to get bids out on authorized projects under present procedures. The committee recommends giving the services a lump sum kitty to help speed things up.

Navy is criticized for its handling of the DEW Line extension it is building in the north Pacific area. Committee says Bureau of Yards and Docks took too long in drawing new plans after decision was made early this year to locate Navy's part of the line.

•

Eisenhower criticized Congress for adding 52 water projects to Army Engineers' program over and above those he asked for. Three of these, he said (Eufaula and Keystone Dams, Dardanelle Lock and Dam) will cost an estimated $750 million if the river program of which they are a part is fully completed.

However, money to start these projects is available and the Administration won't impound it. Last year, the President didn't block the funds for 107 starts that he hadn't asked for.

•

Contract award for an $86.6-million Ventura project dam came within hours after Eisenhower signed the public works money bill. Reason: The water users who will benefit from the dam and canals put up some $700,000 back in 1954 to get the planning work under way. They'll be repaid out of the money appropriated by Congress.

•

Question of getting housing legislation will go right down to the final wire of this Congress, apparently. The huge bill—covering public housing, home improvement, military housing, college housing, Fannie Mae, housing for the elderly, and the like—has been hung up for weeks by a deadlock between those for and against public housing.

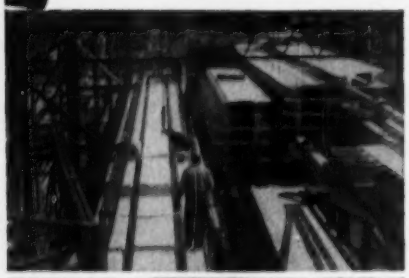
Senate has passed a bill, but the House Rules Committee blocks any moves to get the House bill onto the floor for a vote. Some parts of the measure will have to be taken care of, regardless; these include such things as FHA home improvement loans and military housing, which would expire this fall if not continued.

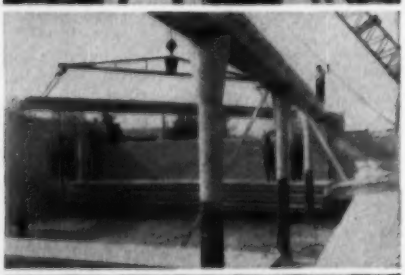
•

Federal funds for school construction is dead for this year. That's the consensus this week following the House debate over segregation that wound up in a decisive vote saying no state gets money unless it has taken steps to eliminate segregation. The Administration and others had hoped to keep segregation out of the bill entirely.

Eisenhower in a special message hoped for a revival even at this late date. But odds now are heavily against any new ideas to pump out funds getting Congressional approval this year.

ECONOMY WITH A BIG E





Precast and Prestressed 'Incor' Concrete Frame and Roof —Strong, Durable, Fire-safe . . . for $1.25 per Square Foot

● The owner of this warehouse posed two requirements: It had to be 100% fire-safe, and within the limits of a modest building budget. All-concrete construction was the logical answer to the first requirement, and a combination of precast and prestressed structural members met the second "must."

The most economical design called for roof members with 40 ft. span and the solution turned on the use of precast, prestressed double-T roof-deck members. Columns, 13 ft. clear height, and beams of 21-ft. span were precast.

Maximum economies were realized by fabricating members to closest tolerances in the casting yard to assure economical erection, using 'Incor' 24-Hour Cement for assembly-line production speed and lowest unit production cost.

End result is a fine building with the fire-safety and durability of all-concrete construction, at $1.25 per sq. ft. for frame and roof. Total cost of completed 31,000 sq. ft. warehouse, heating plant included, $4. per sq. ft.

When economical cost is the object, and it nearly always is, use 'Incor' for maximum production economies and fullest realization of the advantages inherent in prestressing.

L. H. JENKINS, INC., Shipping & Storage Warehouse
Architect: MARCELLUS WRIGHT & SON
Contractor: WISE CONTRACTING CO., INC.
Precast & Prestressed Units: CONCRETE STRUCTURES, INC.
—all of Richmond, Va.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK NORFOLK • RICHMOND • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY

The construction outlook:

A Brief Breather in the Boom

The volume of heavy construction contracts—colossal in the first half—will be merely sensational for the next six months. Even with some downturns, the second half will be the biggest on record. On top of this, a continued buildup in the backlog of proposed work indicates the boom will become a "superboom" again in 1957 (ENR May 31, p. 81).

Under the impact of the biggest industrial building boom in the nation's history, heavy construction contractors garnered new business at a record rate for the first six months of this year. By the end of June, contractors had signed up more than $2.8 billion in industrial building contracts, 126% more than the same period a year ago, and 19% more than in the first half of 1951, the previous record year, when defense expansion was at a peak to meet the Korean War emergency.

Industrial building awards may slide from their peak rate of about $110 million a week in the first half to about $80 million a week during the next six months. This is still a boom with a capital B. The $80-million-a-week rate for the second half would be 24% ahead of the same period last year. This would also bring the 1956 total to more than $4.9 billion—a new record. (It would also be $1.2 billion above ENR's February 1956 forecast.)

Aside from industrial building the other boom-makers during the first half were highways, bridges, waterworks, sewerage, earthwork and waterways. Increases over a year ago ranged from 56% for earthwork and waterways to 11% for highways. Sewerage contracts ran 53% ahead of the comparable 1955 period, waterworks were up 23% and bridges, 38%. These categories should climb to a new six-month high during the second half. Awards are expected to top the first six months by 4%, bringing the total for the year to $6.8 billion—a new record.

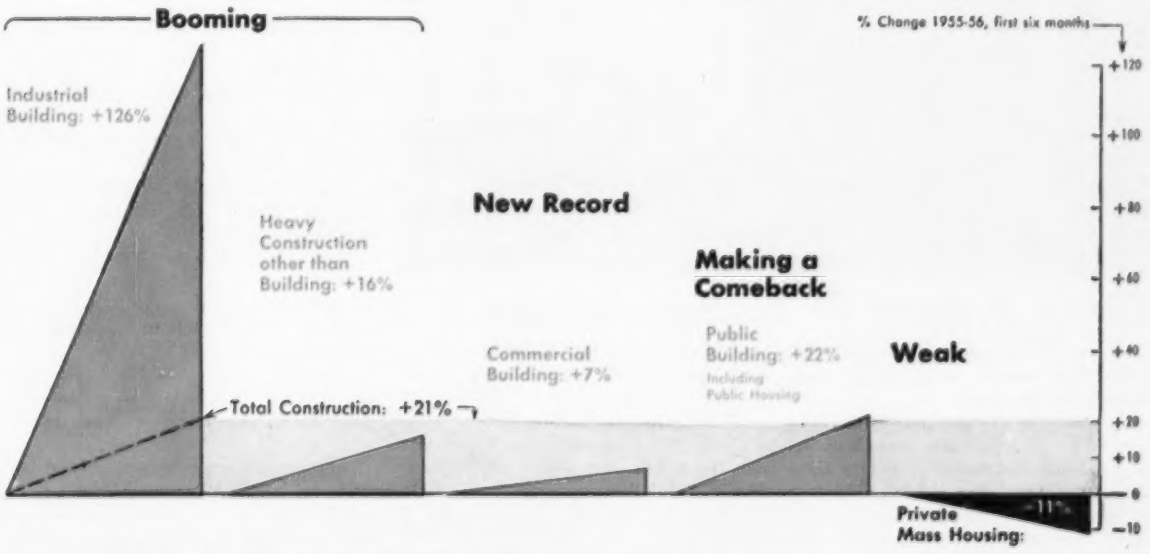
Waterworks, sewerage, earthwork and waterways and highways are headed for all-time highs. And, this should be the second best year for bridge construction. Roadbuilding awards topped year-ago figures for the first five months, then fell slightly below the 1955 figure for June. But this category is due for a second-half volume of awards that promises to be heavy.

• **Fast start, slow finish**—Commercial building—including shopping centers, stores, office buildings and private institutional projects—set a new mark of nearly $1 billion in contract awards for the first half of the year. However, nearly all of commercial building's sensational gains came in the first two months of the year. At that time, contracts were zooming along 113% ahead of the comparable 1955 period. Since then, awards have skidded.

The downturn in commercial building is expected to continue in the second half. But even with its lower rate of contract awards, it will run ahead of the comparable 1955 period by about 10%. It adds up to a probable $1.8-billion total for the year—and a new record.

One reason commercial building has lost some of its steam is that there have been fewer of the large, integrated residential and shopping center projects. This drop in combined housing and commercial building projects also accounts for part of the lag in

Heavy Construction Contracts in '56: First Half at a Glance



total mass housing awards, although credit restrictions and the growing scarcity of cheap land for large-scale developments have been more important (ENR June 28, p. 21).

• **Housing goes down**—Private mass housing, like commercial building, started the year with a bang. Through the first quarter, mass housing contract volume held even with the fabulous first quarter of 1955. Then, choked by tighter money, the fast-stepping homebuilding industry began to run out of breath. After averaging $126 million a week in awards throughout the first quarter, housing contracts dropped to an average of $106 million a week during the second quarter. At the half-year mark, mass housing was down 11% from 1955. It will continue to go down in the second half.

Private mass housing contracts probably will average $100 million a week in the July-December period, about 5% under the same period last year. Capehart housing (military) will help keep housing totals for the next six months close to the rate for the first half of the year. This would mean a 1956 total of $5.6 billion—as forecast by ENR in February.

Fewer public housing awards also are expected in the second half. This could pull the public buildings category down slightly, to about 8% under the rate for the first half. But even with a decline in public housing, the public buildings total for the year should reach $2.3 billion, well above the $2.15 billion forecast by ENR in February.

• **Federal awards off**—While state and local governmental agencies were letting contracts at a record rate in the first half (the $3.3-billion total was 25% over 1955's record high), federal awards tapered off.

The federal government started the year with a flurry of contracts. At the end of the first quarter, awards were running 13% ahead of 1955. Then the volume dwindled and by the end of June the gain over a year ago was only 1%.

Small as this gain was it is notable for two reasons. First, it was the best first half for federal contracts since 1952. And, it was achieved despite a 25% drop in federal airport awards.

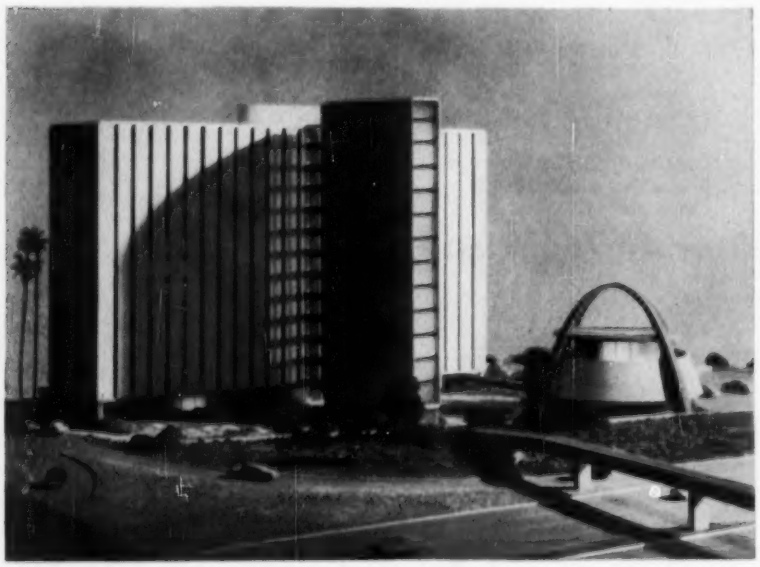
While federal airport contracts were on the downgrade, municipal and county airport awards climbed. Awards during the first half added up to $54.8 million, more than the entire year of 1955 and close to the record $64.4 million posted for the full year of 1950. A new record for the year is in the making.

• **Where's the steel?**—Running through the outlook for various types of construction is the big question of steel supply. The strike will throw construction schedules out the window for many jobs, particularly such big users of structurals as bridges, industrial plants, public and commercial buildings. It will continue the persistent pattern of shortages and slow deliveries well into 1957. The steel strike will also prevent equipment makers from getting the material they need to work off large backlogs of orders. And, it may cause some construction projects to be held back before they reach the contract stage.

To some extent, this would not be unhealthy for construction. The industry would have more time to digest the record volume of business taken on earlier this year. Furthermore, a reduction in the pace of new contracts would help take off some of the inflationary pressure.

While the steel strike may slow activity a bit, it can't get all the blame. Contracts already have started to move down from the super-boom rate of the first quarter, when they set a blistering pace of $443 million a week. This was trimmed to an average of $432 million a week in the second quarter. And, ENR predicts a further slackening to about $390 million a week through the second half.

(For ENR's report on the Regional Outlook for the next six months, see page 105.)



Center Planned for Building Industry

Ground will be broken in September for a $5-million headquarters for the building industry in Los Angeles.

Sponsored by the Building Contractors Association of California, the Construction Industry Center will include a 150,000-sq ft, 13-story office building; a 13-floor elipitical tower of exhibits; a graphic arts center; and tri-level parking facilities. It will house sales and administrative offices of product manufacturers, financial organizations, subdividers, architects, trade and professional associations.

Designed by architect John C. Linsay, the center will also provide an "expansible" auditorium for meetings, facilities for closed-circuit television, a bank, and a restaurant.

Design and Funds Sought for $30-Million Sewage Works

The San Diego City Council last week indicated that it would submit to referendum, a $25-million to $30-million bond issue for construction of a new sewage treatment plant. Negotiations for the plant design will be under way soon.

The project will be financed through revenue bonds. A sewage service charge, assessed at 30% of water users' monthly bill, will be levied by the council and collections are expected to start next month. Anticipated annual revenues amount to $2.2 million. Of this figure, about $1 million would be used for operation of the city's sewage system, the balance to go for expansion of the facilities and bond retirement.

The council's action was spurred by an order from the regional Water Pollution Board to stop discharging excessive quantities of sewage into the Bay.

Consultants' Council

Consulting engineers form their own national society

A national confederation of associations representing consulting engineers was formed last week in Tulsa, Okla., as the Consulting Engineers Council.

The ten consulting engineer groups that joined as founding members were: Chicago, Colorado, California, Missouri, Gulf Institute, New York City, Oklahoma, Intermountain, Minnesota and Upstate New York. Two other local groups, Georgia and North Dakota, joined as charter members.

The new organization, which is restricted to those executives sharing in the profits—or losses—of their firms (salaried employes are excluded), elected John K. M. Pryke, president.

Pryke, president of the New York Assn. of Consulting Engineers, also was chairman of the interim steering committee (ENR Apr. 26, p. 76).

Other officers elected were: C. C. Pate, first vice president; B. M. Dornblatt, second vice president; Edward J. Wolff, secretary and Wm. C. E. Becker, treasurer.

Until a permanent headquarters site is selected, the council will use the offices of the NYACE in New York.

Work Begins Soon

First section of Detroit expressways to be started

First construction on sections of the $1.5-billion, 258-mi expressway system in the Detroit, Mich., area will be started within 60 days, according to an announcement by Mayor Albert E. Cobo.

Start of construction, according to Cobo has hinged upon legislation of the federal highway bill and agreements with the State Highway Department and the Wayne County Road Commission.

A 157-page report, which was three years in compilation by the Federal Bureau of Public Roads and state, county and local traffic and highway experts at a cost of $750,000, has set up recommended priorities for the construction program.

Here is how the various sections are slated to start:

- **$46-million** extension of the Edsel Ford Expressway from Eight-Mile Road to the suburb of Mt. Clemens—13 mi.
- **$305-million** Fort-Vernor highways route to downriver communities and the Gratiot-Hastings-Oakland expressway—30 mi.
- **$161-million** Grand River Expressway from downtown to Farmington—17 mi.
- **$57-million** improvement of Northwestern Highway to extend John C. Lodge Expressway—15 mi.
- **$69-million** development of Southfield Road to relieve Telegraph Road—16 mi.
- **$135-million** for development of crosstown streets as expressways and distributors for industrial traffic.

The first stage of the highway program will cost an estimated $775 million, with second stage construction designated as future projects set at an additional $725-million expenditure.

Cause of Collapse

Failure of highway bridge blamed on faulty shoring

The Texas State Highway Department released a report this week that attributes the collapse of a steel plate girder bridge over the Brazos River (ENR Jan. 26, p. 23) to a collapse of piles under the south column of a temporary support. At the time of collapse, an 80-ton erection traveller was setting an 85-ft, 24-ton girder section in place across a 180-ft span between piers 60 ft high. Five construction workers were killed, three others injured.

Prepared by Sverdrup & Parcel Inc., St. Louis, Mo., the report reaches the following conclusions:

- "The bridge was well designed."
- "The erection scheme was in general well thought out and would not normally result in damage to any part of the permanent structure."
- The temporary support, "48 ft 6 in. east of Pier 7 was by far the weakest of the supporting members at the moment of the collapse. . . . It is therefore logical to assign the responsibility for the collapse to members of this unit."

The bridge is located about 50 mi northwest of Houston, Texas, on State Highway 159 between Hempstead and Belleville. Begun Dec. 24, 1954, it was 62% complete when the accident occurred. According to Chief Bridge Engineer, Randle Alexander of the Highway Department, the contractor has now removed the wreckage and is ready to begin pier construction.

Austin Bridge Co., Dallas, Texas, is the contractor on the structure which, with an overall length of 976 ft, will cost more than a half-million dollars.

Engineer, Attorney, Tax Man Named to State Water Board

An engineer, an attorney and a tax administrator will serve as $15,000-a-year members of the newly created California State Water Rights Board.

The members of the board will be W. P. Rowe of San Bernardino, the engineer; Henry Holsinger of Sacramento, the attorney, who was principal attorney for the old State Division of Water Resources; and John B. Evans of Oakland, who had been a State Board of Equalization tax administrator. Rowe had been a member of the State Water Resources Board.

The Water Rights Board will rule on legal rights to the use of the state's water resources for development of hydroelectric power and water use for industrial, municipal and irrigation purposes. This duty formerly was vested in the State Engineer, whose position was abolished when the new Water Resources Department became effective.

Harvey O. Banks, who was the State Engineer, is the director of the new department **(see page 25).**

Turnpike Linking

Survey of Oklahoma link with Kansas pike okayed

The Oklahoma State Highway Commission has authorized an immediate engineering survey on five miles of four-lane highways that would provide an immediate tie with the Kansas Turnpike to Oklahoma's highway system.

The Benham Engineering Co., of Oklahoma City, was awarded the contract for the survey.

Irked, however, by nationally-distributed pictures showing the Kansas Turnpike ending in an Oklahoma wheatfield, with no road connection, Oklahoma's Governor Raymond Gary told newsmen that his state doesn't intend to have the turnpike end in such a manner.

If he has his way, the state will shelve plans for a tollroad from Oklahoma City to the Kansas Turnpike below Wichita and push for federal approval of a 100-mi freeway that would extend from Oklahoma City to the dead-ended pike.

According to Gary, engineering and survey work that has been completed for the proposed tollroad can be used in building the free highway. He previously announced that two of three tollroads will be shelved in favor of interstate highways.

In setting aside the Kansas road and a highway from Oklahoma City and Tulsa to Dallas, he said that efforts will be concentrated on financing a 130-mi southwestern tollroad from Oklahoma City toward Wichita Falls, Texas.

Only the Qualified

Prequalification required for bidders to obtain data

Under new regulations of the Delaware State Highway Department, only prequalified bidders will be permitted to obtain plans, special provisions and blank proposals to submit bids on department projects.

In order to become qualified each bidder must submit sworn statements on department forms as to experience and financial resources. The experience questionnaire relates to the experience of the bidder and lists a history of his work. The contractor's financial statement concerns his current assets, liabilities and contingent liabilities.

In the future these statements will be submitted to the department in January and—if approved—will be good for the calendar year.

However, a bidder may become qualified at other times during the year providing his statements are properly executed, submitted 30 days before a bid, and approved by the chief engineer 20 days before receipt of a bid.

Plans, specifications and blank proposals for bidding purposes can be obtained only after approval has been granted.

The department is taking steps to see that any bidder will have an opportunity to become qualified under the new regulations. Forms will be sent to each concern that submitted bids to the department on any project since Jan. 1, 1955. Any individual, firm or corporation that does not receive these forms and wishes to prequalify can address a request to the department.

Frozen Ground Lifts Floor—Owner Worries: "Roof Next?"

Permafrost, a condition usually prevalent in Arctic regions, is causing trouble in indoor ice skating rink in Berkeley, Calif.

Workers discovered that there was solid ice 22 ft down while they were cleaning 16 mi of pipe coils in the rink. The ice has pushed the floor up 3 ft and "if we let it alone," owner Louis C. Owen commented, "it'll raise the roof." The ring covers 20,000 sq ft.

Universal Form Clamp Co. Photo

The World's Biggest Building Excavation?

Covering a 2½-square block area and extending four floors below street level, this yawning hole in downtown Denver is believed to be the biggest single building excavation on record. A total of 50,000 sq ft of panel forms are being used for the four floors of reinforced concrete subbasement and car-parking below street grade. The formwork is designed for fast stripping of all but the supporting shoring three days after placing concrete. When completed, the project will contain two units separated by Capitol Drive to be rebuilt across the construction area. On one side will be a 20-story hotel; on the other, stores and a shopping and recreational plaza. Webb & Knapp Construction Corp., Denver, is the general contractor.

Roadblock Cleared

Limited access difficulty removed by court decision

The authority of the North Carolina Highway Commission to control access to highways has been upheld by the courts.

Until now there has been no legal ruling on the question, and several lawsuits challenging the right have slowed the state's road program in recent months. The decision handed down by Superior Court is expected to speed acquisition of rights-of-way for proposed controlled-access roads. But lack of any specific statutory authority still concerns the commission, and the state legislature will be asked to remedy this situation, either at its special session in July or at its regular session next January.

Property owners who initiated the lawsuits contended that the commission had no authority under existing statutes to establish limited access highways, and that limited access would sharply cut the value of land along the routes (ENR, April 5, p. 25). The commission held that although the right to condemn land for access roads is not specifically spelled out in the statutes, it has such authority under its general power to condemn land for general highway purposes.

Tunnel Collapse Kills Two As Timber Supports Fail

An accident during construction of a diversion tunnel for Pacific Gas & Electric Co.'s Poe Hydroelectric Project cost the lives of two workers.

Seven timber structures in the tunnel collapsed, causing a section of roof to cave in.

The 6½-mi long tunnel is being built by Utah Construction Co. and Bates and Rogers Construction Corp.—a joint venture.

A spokesman for Utah said vibration from rock removal cars was a possible cause of the weakening of the 12 x 12 timbers. Nearest drilling operation is 3,600 ft away.

The accident occurred in the 24-ft dia main tunnel at a point where it is intersected by an adit.

The collapsed section was retimbered within two days and work resumed in the area in six days. The cave-in did not halt work on the tunnel, since drilling could continue at portals of the tunnel and in the adits.

The tunnel is part of a $34.9-million project—which includes a powerhouse and diversion dam—on the Feather River, 22 mi northeast of Oroville, Calif. The project is scheduled for completion in 1958.

Operation Water

California Water Director reveals plan for operation

In his first major address since appointment as California Director of Water Resources, Harvey O. Banks has given some idea of how he will operate the new State Water Department which went into effect July 5 (ENR June 14, p. 83).

Talking at the annual meeting of the California Central Valley Flood Control Association in Sacramento, Banks said in organizing the department two assistant directors will be appointed. One will be in charge of engineering and the other in charge of administration and management.

"Under this top bracket," he added, "we plan to create five divisions: 1. Resources Planning; 2. Design and Construction; 3. Project Operations; 4. Administration and 5. Project Finance and Management.

Banks in his talk to the flood-control group said the new Water Department must initially employ a minimum of about 750 people. The State Division of Water Resources, which was abolished and its functions transferred to the new department, had a staff of about 550 who were blanketed into the new organization.

• **Plug for Feather River**—Banks told the group there is no reason to delay any longer a construction start on the state's $1.5-billion Feather River project.

"We are confident that we can start actual construction work on the Feather River project next spring," he added. The state legislature made available $9.35 million July 1 for completion of engineering studies and acquisition of rights of way.

Banks listed three steps which must be taken before any of the state's water problems can be solved. They are:

"1. The department must recommend, and the legislature adopt, a plan and program for state-wide construction of water development projects both large and small.

"2. I believe that the legislature must adopt a program for financing construction of water projects on a long-range basis, in cooperation with the federal government on flood-control projects and other projects insofar as possible, and with local interests.

"3. There must be a solution reached to the legal problems involved in allocation and reservation of water for areas of origin and in permanent and firm allocation of water made available by state projects among the various areas . . . to be served."

CHELSEA STATION off the auction block, into the jaws of demolition contract.

Nobody needed 100 mgd at 600-ft head, so . . .

Unused Pumping Station Faces Destruction

Engineers of the New York City Department of Water Supply, Gas & Electricity were busy last week preparing plans for a demolition contract on perhaps the biggest water supply "white elephant" in the country—the $2.7-million Hudson River pumping station at Chelsea, N. Y. Earlier this year, an ENR story (Feb. 2, p. 30) asked the question, "Anybody need 100 mgd at 600-ft head?" Apparently nobody did. The only reaction to the DWSG&E's plight came in the form of casual inquiry.

The state's Water Power and Control Board, in authorizing construction of the station for "extreme emergency" usage, set its term of operation to coincide with completion of the Delaware River development. Thus, under the terms of the sanction, the plant has to be abandoned and all its equipment removed no later than next Jan. 1. This is precisely what the department's engineers have in mind, as they write the terms of the demolition contract.

The pumping station, built as a sort of "drought insurance" under a jittery city administration in the water famine of 1949-50, has been neither necessary nor useful. The only time the pumps have been operative has been during periodic turning-over to maintain them in good running condition. Under the demolition contract for the pump facilities, the city will ask contractors to quote a price for removing the station and all machinery from the site, disposing of it as they see fit. The six five-stage turbine pumps, each good for 20 mgd against 600-ft head, are driven by half a dozen synchronous motors, each rated at 2500 hp. Hoping that one or more of the bidders will find this and other specialized equipment useful salvage, the city is looking to recoup some of the initial cost of its costly "insurance policy."

In view of the unique nature of the demolition contract, contractors will be given an extended period of time in which to prepare their bids. A small contract will be let first for certain necessary pre-demolition work.

Highway Dep't Boosts Pay Gets Most New Grads Ever

Salary increases spelled success in recruiting new graduates this year for the Wyoming Highway Department. Competing with aggressive recruitment by industry (ENR June 21, p. 21), the department was able to offer college graduates from $425 to $475 per month as a starting salary, varying with experience and other factors.

The present staff of the Highway Department came in for sizable salary boosts as well. Men in professional engineering grades rated $50 to $60 per month increase, with sub-professional and operational personnel receiving proportionate adjustments.

That the increased pay schedules were successful in attracting the recent graduates is evident—the department hired more new college grads this year than ever before in its history.

Massachusetts Turnpike: A Picture

Despite the effects of a long, hard winter and threats of some materials shortages, Massachusetts has set this coming November 15 as the date for opening its cross-state turnpike. Here's a quick report on how the builders are doing.

On November 15—not quite two years after the first contract was let—the Massachusetts Turnpike Authority hopes to have its 123-mi east-west road open from the outskirts of Boston west to the New York State line.

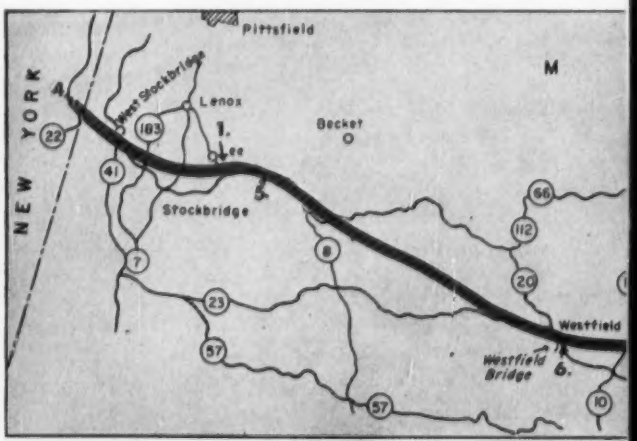
Late last year ENGINEERING NEWS-RECORD took an overall look at the $239-million undertaking (ENR Oct. 20, 1955, p. 38). Now, with the construction season entering full swing—and the accent on speed for the finish line—a second look seems in order. In thumbnail fashion, the accompanying report is the result.

Overall, the accent is on speed—from the $3-million, 175-ft high bridge over the Westfield River to the huge fills across the numerous peat bogs that plague the builders. Paving, at the moment, is far from being in full swing, but fast work on compaction of sub-base, near-completion of most structures promise that the work will move very fast.

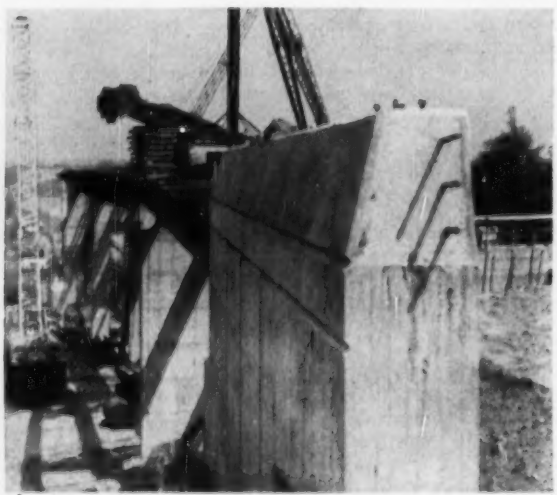
Although the 'pike now officially ends at its intersection with Route 128 outside of Boston, there's lively discussion now of routes to bring the road into the downtown heart of that city. And at the western end, New York State has already started letting contracts for building a connection with its Thruway.

1. Truck-size boulders that must be blasted apart for convenient handling are a problem on western section. In cut, Lizza & Sons use track-mounted rock drills for the job. This will be eastbound section of road; westbound lane will be above rock.

4. End of the road—the state line—is in the trees in center background, where 'pike will meet New York's Berkshire Thruway. Paving here, by B. Perini & Sons, is one of two spots on the route where asphalt was going down at the end of May. Five-inch crushed stone sub-base gets rolling after "shot".



5. Simple deck girder bridge over the Housatonic at Stockbridge, with carefully laid stone riprapping on slopes, is typical of dozens of stream crossings along the route. Stream has been partially diverted during construction operations.

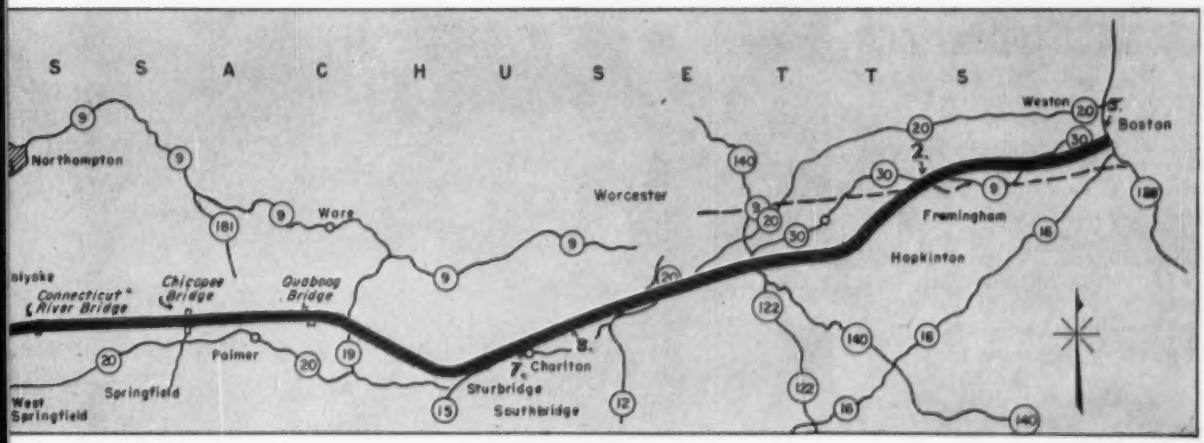


6. Biggest bridge will be the 1,445-ft continuous girder structure 175 ft above Westfield River. To shorten height of center pier, depth of truss at that point was made nearly 100 ft. Mt. Vernon Bridge, here finishes erection of traveler.

Progress Report

Binder course, near Boston, is put down by three 16-ft-wide pavers. First course is ¾-in. loose sand; followed by 5 in. of crushed stone, compacted with tampers which bring sand up into stone as much as 3 in.; penetration asphalt; drag-broomed pea stone, rolled with steel roller; binder course; and finally, a 1½-in. asphaltic-concrete wearing course for finished roadway, 3 lanes wide here.

3. Last jump for turnpike is bridge over Charles River and Route 128 near Weston, a few miles west of Boston. Studies of possible routes to bring the road into the heart of the city are now under way.



7. Four-yard bites come out of last major excavation on Nello Teer's section near Sturbridge. Material goes into 420,000-yd fill across a peat bog about a mile away from scene. Glacial till makes easy work for shovel, tough for scrapers.

8. Unusual structure is this 24-ft-wide culvert near Charlton City, 240 ft long, cast in three successive pours on a traveling form that was moved by jacks on hardwood rollers. Structure bridges French River, leads into filled area.

California Water

6-billion, five-year plan for public works announced

California's Governor Goodwin J. Knight recently pulled together all aspects of planned federal-state public works construction—and it added up to a whopping $6-billion program over a 5-year period.

Between now and July 1961, Knight sees being expended:

- $870 million by the state for the Feather River water project.
- $70 million by the state on flood-control projects.
- $440 million by the Corps of Engineers on flood-control dams and other works.
- $340 million by the federal Bureau of Reclamation on the Trinity River dams, the Central Valley Project and other irrigation works.
- $500 million by the state for construction of universities, and colleges, mental hospitals, penitentiaries, veterans homes, forestry honor camps, state office buildings, and other requirements of an accelerated state public works program.
- $500 million in state aid for construction of schools for local school districts.
- $1 billion to assist California veterans in buying and building more homes and farms.
- $1.5 billion in state outlays for highways.
- $500 million to $700 million in federal aid for highways.

"These figures," said the governor, "do not include many more additional millions that will be spent during these five years by local public and private agencies."

Highway Department Battles Bridge-Devouring Termites

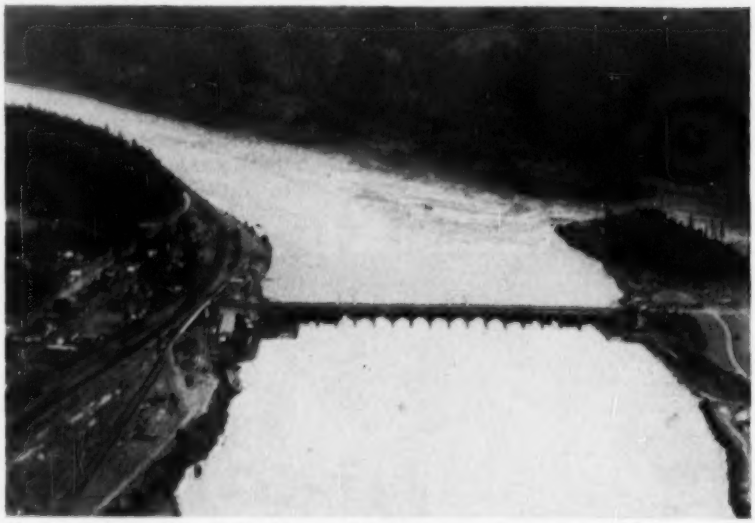
Hawaii's Territorial Highway Department has a new problem: How to get rid of termites in a bridge foundation.

The department made the discovery when it checked foundations of a bridge over a river emptying into the ocean at Wailua, Kauai.

Its findings were that: (1) the stream had eroded in depth from 11 ft to 27 ft; (2) the water below 10 ft was salty; (3) teredos were living in the salty water and a marine boring termite had damaged about 40% of the foundation.

The department plans to repair the pilings and refill the river bottom to the 10-ft level. And it hopes that the teredos will be killed by the fresh water at the upper levels.

Upstream, The Dalles job was flooded on purpose while . . .



Downstream, Bonneville Dam passed flood, all gates open, but . . .

Lowland areas suffered some flooding without severe damage as . . .

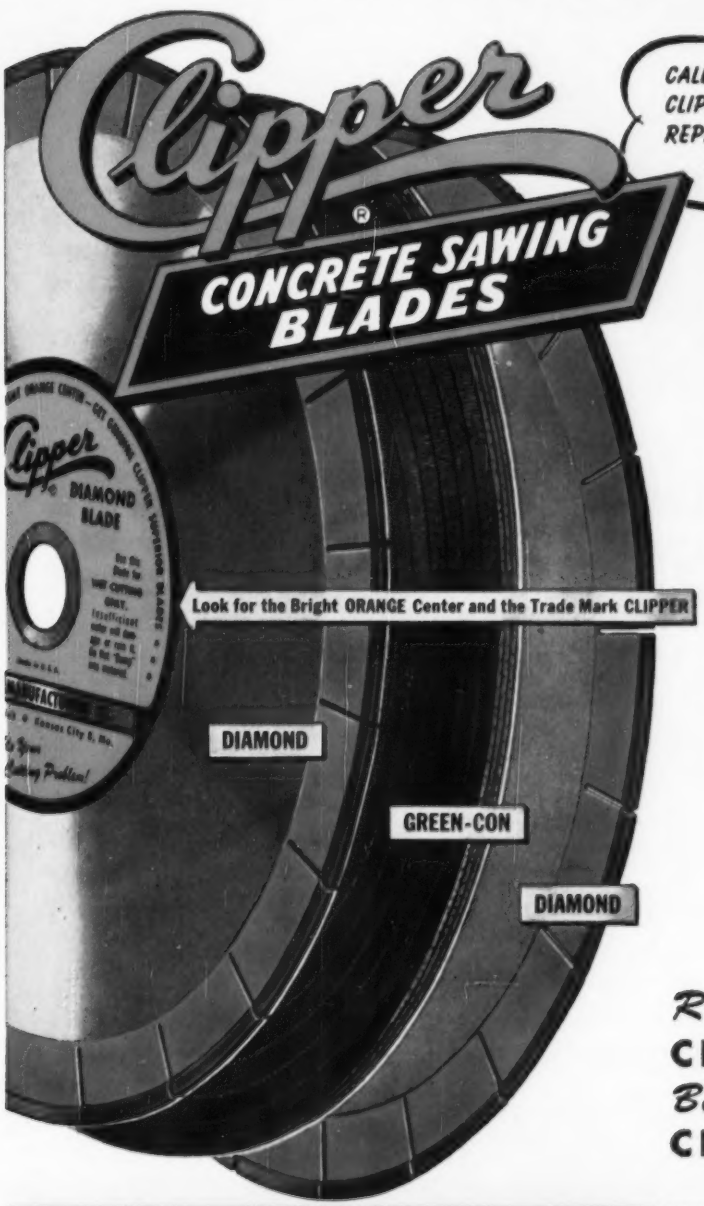
Columbia Valley Has a Close Call

June was a tense month for residents of the Columbia River Valley. With a combination of near-record snow blanket and 9-ft tides, the river edged perilously close to the tops of levees in many sections. By mid-June, the danger was over and the heaviest April-June runoff of the century slipped into the Pacific, with no major disaster along the Columbia's thousand-mile length.

There were several close shaves, however. Army Engineers at The Dalles Dam ordered cofferdams flooded to protect uncompleted structures from the shock of churning river. With gates wide open at Bonneville Dam, the only casualty was an 800,000 kw drop in power output, due to high tailrace waters. Downstream, with the river 11 ft above flood stage, some dikes gave way and lowlands were inundated.

Favorable weather, regulation of pool elevations behind dams and a series of emergency levee rehabilitation were among the reasons major damage was averted. Additional flood-control protection, to the tune of some 20,000,000 acre-ft of storage, is needed before the valley will be completely free from flood worries.

CLIPPER *Sells* MORE... *Because* CLIPPER *Sells* QUALITY!



BLADE *for* BLADE
CUT *for* CUT...
Your BEST BUY *is* CLIPPER!

Clipper offers the only complete range of DIAMOND BLADES . . . and GREEN-CON ABRASIVE BLADES for all concrete sawing jobs. Use DIAMOND BLADES for green or cured concrete with ANY aggregate! Use GREEN-CON ABRASIVES for cutting green concrete. Clipper's FACTORY-TRAINED REPRESENTATIVES are always on call to help you with your concrete sawing problems.

You Cannot Buy A Better Blade than Clipper!

Remember . . .
CLIPPER *Sells* MORE
Because . . .
CLIPPER *Sells* QUALITY!

Clipper® KANSAS CITY, MO.

Better Mail the Coupon NOW!

● **Genuine Clipper Products are Sold Only Direct, by Factory-Trained Representatives from Factory Branches in Principal Cities, Coast to Coast. Consult Your Phone Book, or Mail Coupon for Same-Day Service.**

CLIPPER MANUFACTURING CO.
2812 S. Warwick • Kansas City 8, Mo. 525X

☐ Send information on CLIPPER GREEN-CON ABRASIVE BLADES FOR Green Concrete Sawing.
I'd also like to know about:
☐ Diamond Blades for Concrete Sawing ☐ Concrete Saws
☐ Masonry Abrasive and Diamond Blades ☐ Masonry Saws
☐ Please have my FACTORY-TRAINED REPRESENTATIVE Call on me.

NAME _____
ADDRESS _____
CITY _____ STATE _____

Nationwide demonstrations and conferences introduce highway engineering leaders to . . .

The Electronic Computer—Top Tool in Highway Design

One of the most exciting developments affecting the highway engineering field in recent times—and one that is rapidly spreading into the other design fields—is the mushrooming adaptation of electronic computers to many phases of highway location and design.

During the last six months, acceptance of the machines and other devices with which they can be combined, and the spur of snow-balling competition among computer manufacturers, have made electronic aids the most talked of subject in the industry.

• **Not by chance**—Development of programing and methods of using computers to aid in solution of highway engineering problems, and rapid integration of machines into design procedures, have not just happened. Behind the rapid evolution lies a much longer period of development, education, liaison and promotion on the part of A. C. Clark, Deputy Commissioner for Engineering, U. S. Bureau of Public Roads and three BPR engineers.

H. A. Radzikowski, chief of the maintenance branch of the bureau, and two of his men, S. E. Ridge and L. R. Schureman, have been pushing electronic aids to highway design for a long time, but it wasn't until January, 1956, that computers and general interest in them by leaders in the engineering field took the movement off the ground. The Bendix Aviation Corporation, later teamed with consultants (and photogrammetric specialists), Lockwood, Kessler & Bartlett, Inc., of Syosset, N. Y., convinced many attendants at the American Road Builders Association Miami Beech meeting that machine computation, linked with any of many supplementary aids, could save substantial amounts of time and cost of engineering manpower through replacement of techniques and methods that have been long accepted as conventional practice.

From that time on, individual states and manufacturers have pushed the trend to a point where everyone is struggling to keep up with the tide.

This is not the first time Radzikowski's office has worked as a development and promotion voice for the bureau. They spearheaded the development of the nation-wide network of highway department two-way radio units, winding up with more than 300 state, local and county departments tied together for more effective department operations and positive unification under national defense procedures.

After the great interest and enthusiastic reception at Miami Beach, computer manufacturers who can offer a machine adaptable to problems in the highway field have been impressing engineers and themselves with the variety of operations possible with computers whose primary function heretofore has been solution of industrial accounting problems and

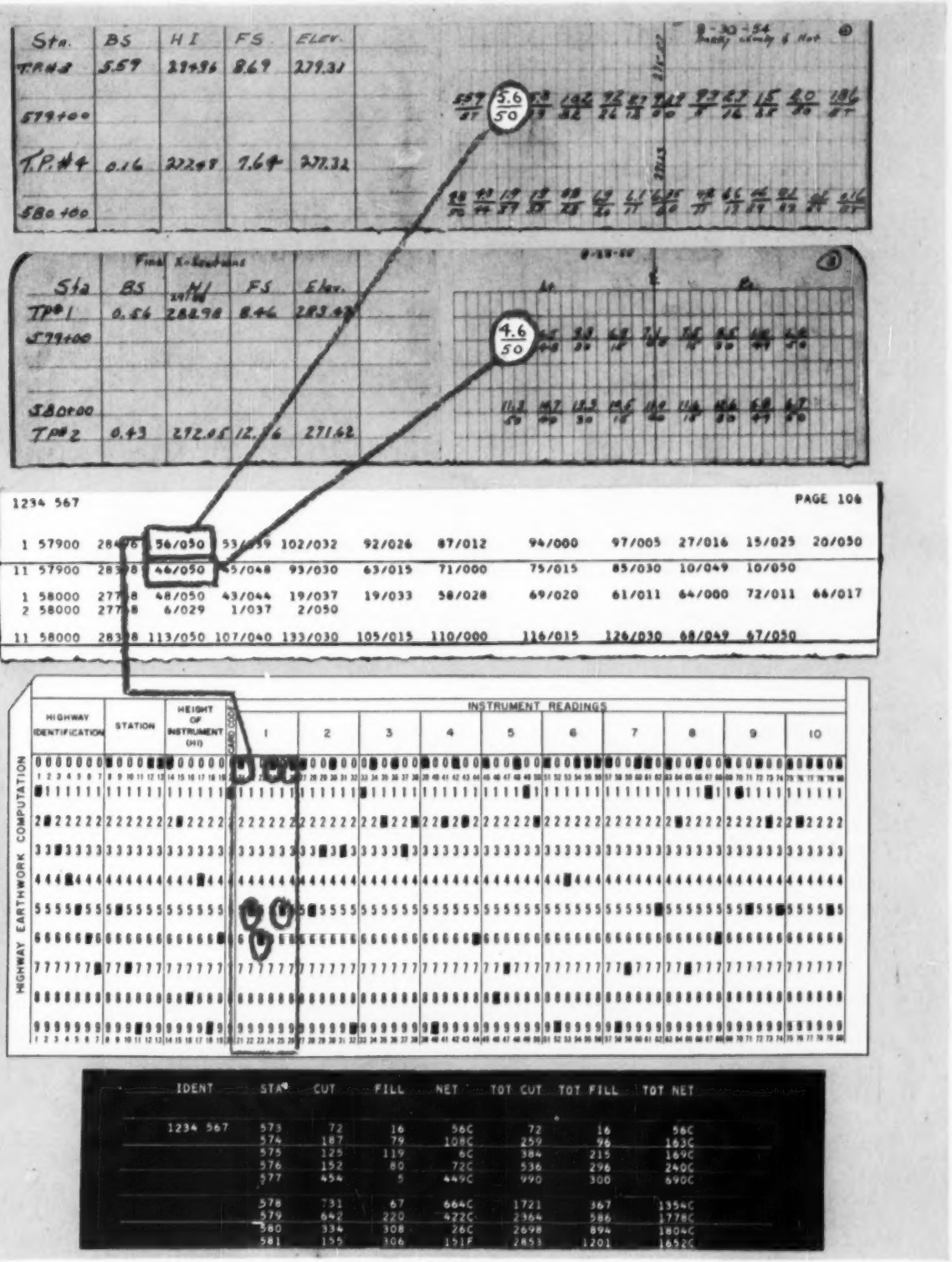
1. First-run survey—Page from field book shows Sta 579+00; rod reading 5.6 taken 50 ft left of C. L.

2. Second run, same station—Rod reading here is 4.6 ft taken 50 ft left of C. L.

3. Input data is taken off by typewriter in pre-set sequence. First and second run data appear on sheet.

4. Card for each station is punched during take-off (3). 1st run card for Sta 579+00 contains all information necessary for earthwork.

5. Computer output sheet provides cut and fill data by station and in total, eliminating cross sections.



general analytical and classification problems.

At present, there are about five manufacturers actively producing machines and adapting them to highway needs. However, it is said that at least as many more will be producing machines by the end of 1956.

• **What can they do?**—All machines are basically the same, technically different. They must start with the same material, the familiar data from

. . . Electronic computers: parts, advantages

survey field notes or from photogrammetric surveys and must be programed to supply from those data all figures necessary for the design and layout of the highway in prospect.

From completed survey notes, entries fed in proper sequence to the properly programed machine, are added, subtracted, multiplied and divided according to previously ordered instructions and answers are turned out on a typed sheet in the form of station-by-station cut and fill data, cumulative cut and fill data, location data, slope stake locations, or plane survey data such as traverse closure. Traffic survey counts and origin and destination analyses also are programmed on some of the machines that are now in existence.

• **What makes them tick?**—In the general composition of all machines are five basic parts. First is an input device with a command (programing) and a general data input function.

The heart of all computers is the control unit, which receives the instructions from the input device, follows the detailed sequence of commands—adding, subtracting, multiplying, dividing, comparing, selecting, rejecting—all according to the pre-set program. It must be remembered that all operations are performed one step at a time under rigid control, and that it is the mechanical speed with which the steps are strung together that gives the impression that the computer solves many problems simultaneously.

The third segment is the arithmetic portion, which is nothing more than a mechanical calculating machine of high order connected through electronic linkage with the control unit. It is the electronic feature that accounts for the machine's incredible speed of operation (some steps are measured in millionths of seconds).

The fourth part is the memory mechanism. In most machines this part is a magnetic drum that stores information as it is fed in, thus making it available when called for according to the preestablished control program. The same stored figure may be called back repeatedly for different computations according to instructions.

The fifth and final part of the computer is the output device, which converts machine findings into typewritten, usable form.

Input material may be fed into the machine by keyboard, punched card, paper tape or magnetic tape, according to type and make of the equipment. In almost all cases, however, the material turned out is automatically typewritten.

• **Manpower or machine**—The effect of the electronic computer on the civil engineering field generally has yet to be felt. New adaptations are being constantly worked out, and the limit of future developments is not even in sight. Initial emphasis has been placed on highway uses, but a great deal of development is in progress in structural design fields, especially for bridges and tall building structures.

In all of its fields of service, the computer is a manpower saver. When used by itself in highway work, without linkage to other devices, such as photogrammetry, plotters, and radio transmission of survey material, savings in manpower is the essential advantage. Savings in time are most apparent when the machine is used in conjunction with fast survey methods, and this is where "marriages" between computer manufacturers and photogrammetric outfits have come into their own.

Without rapid survey techniques, an office crew can keep pace a day behind the field survey crew, and the time element diminishes in importance even though the computer can save much time in "trying" various routes in search of the best.

Harnessed with photogrammetry, electronic computations will pile up spectacular records, shaving months from design time in some large projects. The 15 or 20 minutes required for each cross section in manual earthwork calculation can be eliminated entirely through use of the computer. All calculations are made within the machine. Material on the typed sheet of the output device can be read directly, and the only time cross sectioning may prove necessary is when tricky problems or specifications demand them.

Cross sections are said to constitute about two-thirds of paperwork on conventional road plans. Elimination of this portion of the plans substantially reduces the cost of preparation of the plans and engineering manhours required.

• **How computers are used**—At present, the most active manufacturers in the computer field are International Business Machines Corp., Bendix Aviation Corp., Remington Rand, Inc. and the Burroughs Co.

A sample operation using an IBM, Type 650, Magnetic Drum Data Processing Machine (MDDPM) is presented in accompanying box. It covers a start-to-finish, field-to-bidsheet succession of an actual two-run survey made by engineers of the Texas State Highway Department. The machine in the sample is a commercialllly available punch-card computer of which more than 300 are in use, doing general industrial duty. Its adaptations to earthwork computations requires no additional equipment, as indeed is the case with most machines.

The sample gives an indication of what can be done by a computer harnessed with conventional surveying procedures. It shows the manner in which cross sections—and many engineering manhours – have been eliminated. It also indicates why time required for the field survey reduces the advantage in the speed of the earthwork computations. The speed and accuracy of photogrammetric survey techniques, however, have provided for electronic computers the ideal medium for performing at their best, with fullest advantage taken of their short cycles of operation.

• **What's in the future**—Going beyond linkages with several supplementary devices, growth of interest has been a spur to the development of signficant improvements in the machines themselves, thus strengthening the BPR stand in its recommendations to states that are planning their use.

BPR has advised prospective users to take advantage of the practice of most of the computer manufacturers to rent machines or machine time. The machine makers even go so far as to provide trained operators to go along with the machine to eliminate the necessity of training highway department or contractor personnel.

The reasons are sound. First, there are hundreds of organizations that are too small to justify outright purchase of the computers. Of the larger consultants and state offices, there undoubtedly are many that could purchase machines and make full use of them. Moreover, the cost is more than that of a piece of heavy excavation equipment.

But there are modifications under way through use of transistors, increased range of programming and supplementary linkage devices that are held to make such a purchase unwise. Modifications will result in lighter weight, cooler operation and greatly reduced size of the units.

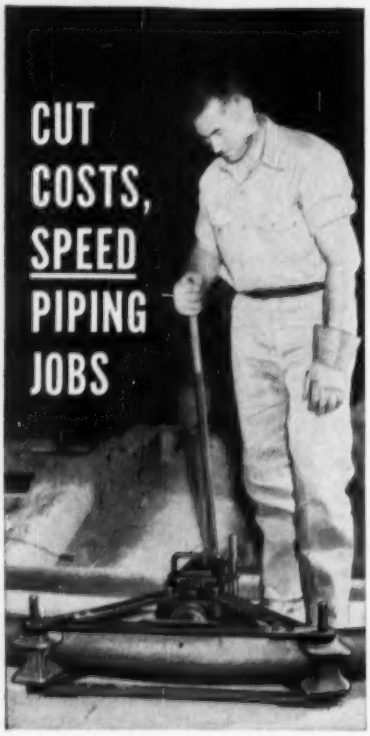
Some states have machines that are used exclusively for design work. Others have found that electronic equipment can be integrated into their bookkeeping and accounting sections and still provide service to engineering and other departments. Still other states have machines on order or are investigating feasibility of purchase.

California has used its IBM Type

faster

Royal Blue
has won acceptance *faster* than any other wire rope in Roebling history

John A. Roebling's Sons Corporation, Trenton 2, N. J., Subsidiary of The Colorado Fuel and Iron Corporation BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 81 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH, 1722 HENRY W. OLIVER BLDG. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 331 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6.



...with Greenlee Hydraulic Pipe and Conduit Bender

Built for the tough jobs, the GREENLEE Bender saves hours, reduces costs on your pipe and conduit work. With a GREENLEE *one man* quickly makes bends in pipe up to 5", rigid and thin-wall conduit *right on the job*, exactly where and when needed. Many owners report time and labor savings of 50% or more . . . and the cost of many manufactured bends and fittings is entirely eliminated. Compact, portable, versatile to reduce your costs, eliminate construction delays, keep jobs rapidly moving along on schedule. Available in two sizes. Thousands in use by construction crews, electricians and plant maintenance departments. Often pays for itself on the very first job!

FREE BENDER BOOKLET with complete data and illustrations on GREENLEE line of hand and hydraulic benders for tubing, pipe and conduit. Shows how to do various bending jobs quickly and easily to cut job time, reduce costs.

GREENLEE

GREENLEE TOOL CO.
2227 Columbia Ave., Rockford, Illinois

. . . Electronic computer: Interest is rising

50 machine extensively for highway design and traffic control work, under direction of Samuel Osofsky, supervising highway statistician.

Arizona and Louisiana have Remington Rand Univac 120's and Oregon has a Model 602-A IBM calculator.

Among the states that have equipment on order are Georgia, Massachusetts, Indiana, Virginia, Wisconsin and Texas.

States like Florida, with its IBM investigation going on, and Illinois checking over the Bendix, may or may not purchase machines, but they are sure to be using them.

Ohio's bureau of location and design chief, E. S. Preston, is experimenting with machines, but he is also doing an all-out study of supplementary linkages which goes beyond those reported by the manufacturers themselves. He has the advantage of having a state-owned aircraft at his disposal. The plane, operated by the Ohio department of highways, has flown its aerial engineers more than 50,000 miles during the last 12 months.

• **Choice of plotters**—Even in the plotting of contour lines from stereoscopic photographic pairs, there is a choice in the equipment now available. Lockwood, Kessler and Bartlett are using a stereoplotting instrument known as the Wild A-6, which coupled with accurate ground control reference points has performed with great accuracy. Another, stereoplotter now in use is the Kelsh plotter, which—on a 1-in.-equals-50-ft scale map—has surprised even novices with its accuracy. Both plotters are used extensively and accurately in plotting two-foot contours on preliminary and final surveys.

• **But there are limitations**—As might be expected, there is a tendency on the part of some of those using or studying the use of computers in construction, to endow the machines with powers beyond their scope of service—forgetting that no set of computations turned out by a machine is more reliable than the data that was fed into it or of the program that controls it.

The machine, of course, is not selective. If a 111.0 rod reading is transmitted to the machine instead of a correct reading of 11.1, it is easy to see what happens to the cut or fill computations in a section of highway. Possibility of such reasonable errors demonstrates that constant checks on keyboarded material must be carried out.

In complicated complex curves—especially where superelevations come into the picture—the best way to figure the earth excavation still seems to be by manual cross-sectioning and end-area or other accepted method of computation.

(Where these complicated sections are unprogramed at present, BPR stresses that such programing may be imminent.)

Where a centrally located machine handles many programs for several departments, scheduling of machine time and establishing priorities for highway computations may become a bone of contention, especially during the periodical seasons for auditing.

• **Pooling developments**—So far there have been three major conferences on increasing engineering productivity, sponsored by BPR with assistance from state highway departments in each section. The first, in Chicago, called a conference on improved engineering methods and procedures, was held March 6-7. A second was held in Albany, N. Y., March 26-29, while the third took place July 9-11 at Georgia Institute of Technology in Atlanta. Papers and discussion material are made available by the Bureau of Public Roads as soon after meetings as possible.

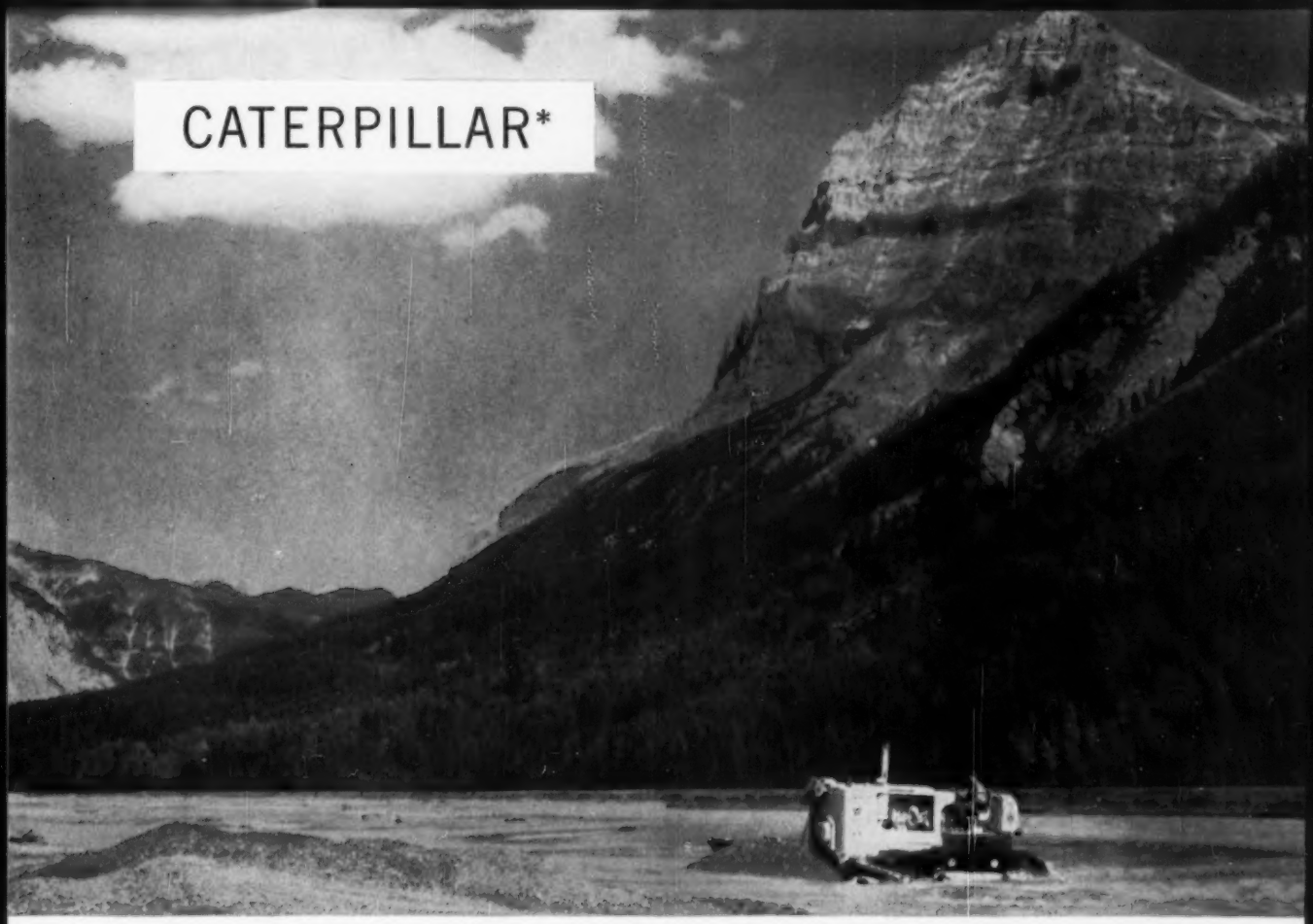
The bureau plans to continue the discussion-demonstration sessions until all areas of the country have had an opportunity to see how the new tools of the profession can be used. BPR is also acting as collection and distribution agency in an effort to pool all information, thus eliminating duplication of experimental and development work.

Colleges, too, have climbed on the wagon, not only in their own development experiments, but in purchasing—or planning to purchase—computers. Case Institute of Technology, in Cleveland, has made its machine available to Ohio's highway director, Sam O. Linzell, who has said that this, coupled with his aerial photogrammetry section, will allow design of more than $25 million of highways this year.

Massachusetts Institute of Technology has had its computers for some time, and it, too, is working with the problem of developing more and more programs and methods for expanding the range of operations possible in the highway design field.

It should not be long before techniques of programing and photogrammetric surveying will become a regular part of the curriculum in the accredited technical schools.

CATERPILLAR*



IN BRITISH COLUMBIA, a D9 builds a dike to keep water from a borrow pit where it is push-loading DW21s on the Trans-Canada Highway construction. The owner, General Construction Co., Limited, Vancouver, reports, "This D9 push-loads 225 DW21s and Scrapers per day with river-run gravel." The D9 is equipped with a No. 9A Bulldozer.

IN JUST ONE YEAR, THE D9 WINS COMPLETE ACCEPTANCE

Across the continent, contractors make it standard equipment on tough jobs

Just one year after its introduction, the Caterpillar D9 Tractor—the biggest yellow machine of them all—is standard equipment in the construction industry. From British Columbia to Florida . . . from Massachusetts to California . . . on every conceivable type of job . . . enthusiastic reports roll in from satisfied contractors who have bought it. The exclusive Turbocharged engine of this Caterpillar giant is making the dirt fly on highway construction and relocation, on land clearing projects, dam and canal jobs, and at large building developments. Reports Minnesota contractor George W. Johnson, "Here is packaged power that we, of the construction industry, never have been offered before." Whatever the reason for this universal enthusiasm . . . power, ease of operation, simplicity of maintenance . . . one fact stands out. Never before has a piece of heavy equipment been accepted and put to use so quickly. CONTINUED

NEAR CHARLESTON, S. C., a D9 clears and 'dozes 150 acres in Bushy Park project to develop water sources on a $4½ million industrial site development. Over 3 million yards will be moved by owner, Robert E. Lee & Co. of Manning.

D9 ACCEPTED *(continued)*

BIGGEST TRACTOR PASSES ITS TEST BY FIRE

The first year in the field is always the most crucial for new equipment. Performance is watched closely and weighed carefully by veteran contractors. Here the D9 passes its first birthday with flying colors on widely different jobs across the nation . . . in soil conditions that include sand, peat, yellow and blue clay, decomposed granite, boulders, shale and gravel.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

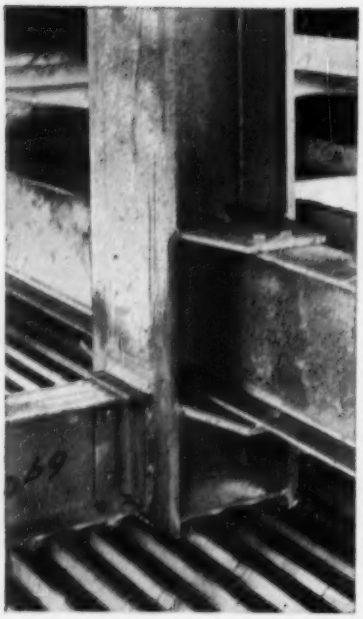
IN MONTANA, a D9 push-loads a No. 90 Scraper on a U.S. Highway 93 project for its owner, Bud King Construction Company, Missoula, Montana. The 31-cu.-yd. (heaped, with sideboards) No. 90, pulled by a D8, is working in a 150,000-cu.-yd. cut near Florence, Montana.

NEAR IDAHO CITY, a D9 pioneers sidecuts, widening and relocating a 11.37-mile section of highway for Morrison-Knudsen Co. In rock and sand, the D9 is making 40 passes an hour, 14 ft. wide, 200 ft. long.

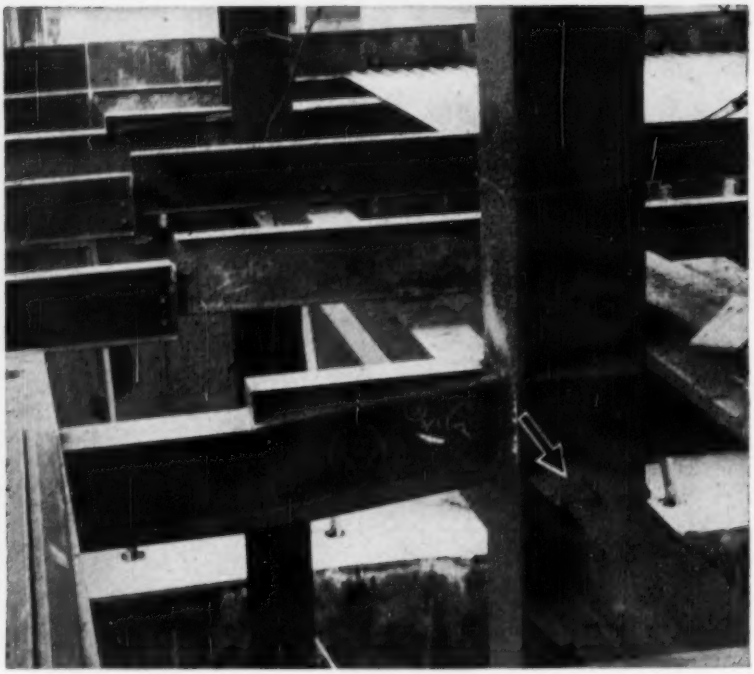
IN STRAWBERRY, CALIF., a D9 builds a 4-mile access road to Beardsley Dam site. The owners, Tri-Dam Constructors of Strawberry, are roughing out this road in 60 days. Soil is decomposed granite and boulders.

IN PARAMUS, N. J., building a shopping center, a D9 'dozes shale and clay to help load scrapers quickly for Sam Braen Construction Co., Wyckoff, N.J. After 'dozing, the D9 push-loads two CAT* DW21s in less than 60 seconds.

IN MINNESOTA, this D9 singlehandedly reduces this cut (450 ft. long by 150 ft. wide) to 8% grade for its owner, Johnson Construction Co., Grove City. The D9 handles 10 to 15 yards a pass on the cut involving 237,000 yd. of fine sand, blue and yellow clay. Job is relocation and widening of U.S. Highway 16.



Rigidity of welded connections at columns shaved main-member sizes while . . .



. . . **Continuity** of beams over girders saved more steel. Floor level was conveniently changed at beam shear connections. Slotted plate (arrow) allowed longer weld.

Earthquake-Resistant Building—

Continuity Lightens Welded Steel Frame

"The lightest limit-height steel structure on the West Coast" is how Victor Gruen & Associates, architects and engineers, tag the new 13-story $4-million office building just completed by Tishman Realty & Construction Co., Inc., at 3325 Wilshire Blvd., Los Angeles.

Top credit for trimming the tonnage of the glass-walled structure, which is designed to withstand earthquakes, goes to welding of the frame. Edgardo Contini, Gruen's partner in charge, and the team of architects and engineers he headed kept the steel weight down to 10 lb per sq ft of enclosed area. Most other limit-height frames weigh 3 to 4 lb more. They also designed the frame rigid enough to eliminate shear walls and diagonal bracing above the basement. This allowed flexibility in space used, fenestration and choice of materials.

Other outstanding features include outside louvers on all four sides to block direct sunlight and sky glare, and an attached five-level parking garage.

Above an open-terraced setback at the second floor, the steel frame is eight 240-ft bays long and four bays wide, with a 6-ft overhang at each side.

The designers kept member sizes small by providing two-way continuity of beams and girders. All connections of beams and girders to columns are welded.

Beams that do not frame into columns are seated on and bolted to girder top flanges and continue into adjoining bays. These beams are spliced near inflection points, so that although full continuity is maintained at supports, the splices require shear connections only.

• **No height added for ducts**—Placing the beams on top of the girders could have penalized clear height. But the Gruen team saw the two-level space as ideal for air-conditioning ducts. They laid out the duct system in two layers also, running the headers at the lower level parallel to the girders, and the branches between the beams above. This space saving enabled the planners to squeeze 13 stories into the 150-ft limit height allowed in Los Angeles and still maintain a minimum ceiling clearance at 8 ft 6 in., with 9-ft-6-in. height available in more than 60% of the rental area.

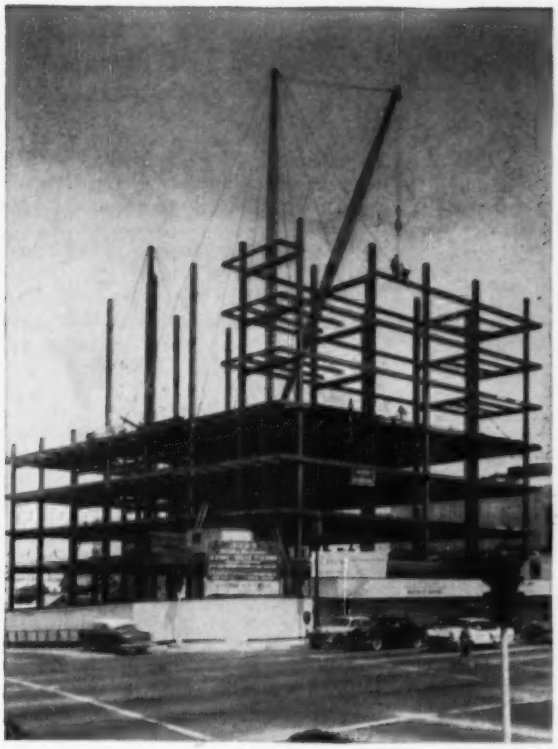
To equalize column stiffness between the east-west and north-south axes of the building, Contini departed from the usual practice of orienting the major axes of all columns in one direction. Instead, he rotated alternate columns, so that the main axis of every column is at right angles to that of its immediate neighbors.

The steel fabricators and erectors delivered the columns to the site in three-story lengths, with seat plates and angles already welded in place for the girders. They bolted the girders during erection and later welded the connections. They spliced the columns at mid-story height.

The alternating column-axis orientation meant that one end of each girder framed into a column web, the other into a flange. To make the web connection, the steel men welded the bottom flange of the girder to a seat and stiffener plate, shop-welded to the web and flanges of the column. Then they welded a second plate to the upper flange of the girder and to the column web and flanges.

The other end of the girder was welded, with full penetration, to the column flange, which was backed up by shop-welded stiffener plates. A seat angle was used for erection.

The steel frame went up in 12 weeks, well within the estimated schedule.



Frame of 13-story building in Los Angeles has columns, erected in 3-story lengths. They alternate in direction.

"Blank wall" (left) is really glass, hidden by fins. These and "eyebrows" (arrow) shade all four walls.

by 350 Tons

Rigid connections were used throughout the office building, except at the second-floor intersection with the reinforced concrete garage. Here, the two buildings overlap instead of merely meeting. In effect, the north side of the office building is notched out from the second floor down to make room for the end of the garage.

But because the seismic actions of the two buildings could not be made compatible, the engineers had to separate the buildings structurally from the foundations up. Since the garage structure could not be used to support the undercut side of the office building, the designers had to support the upper portion of the office building by means of columns passing through holes in the garage floors. These four columns, even though they carried no garage loads, had to conform to the 3-bay-wide layout of the garage.

To make the vertical transition from five columns to four, Contini provided a plate girder at second-floor level. The four lower columns, 41 ft long, are pin-jointed at top and bottom to permit the office building to respond elastically to horizontal forces with complete independence of the garage structure.

• **Garage is split level**—The garage itself is two separate structures. Contini split it down the middle and staggered the floor levels each side of the dividing line so that driveway ramps would be short, ascending in half-story increments. He provided a total of five parking floors, with direct pedestrian access to the office building from each level. The reinforced concrete framing consists of shallow girders and pan-construction joists—both the same depth—and deep, narrow columns, 26 ft 3 in. c-c. The girders are continuous across columns. The joists span between girders and cantilever 13 ft beyond. With room for 357 cars, the parking facilities considerably exceed minimum city requirements.

• **Louvers catch the eye**—Appearance-wise, the most striking feature of the office building is its louvered exterior. Vertical aluminum fins run from top to bottom of the east and west sides to intercept low-angle morning and afternoon sunlight before it reaches the glass walls. On the north and south exposures, horizontal aluminum canopies project at ceiling levels to block out sky glare and high midday sun.

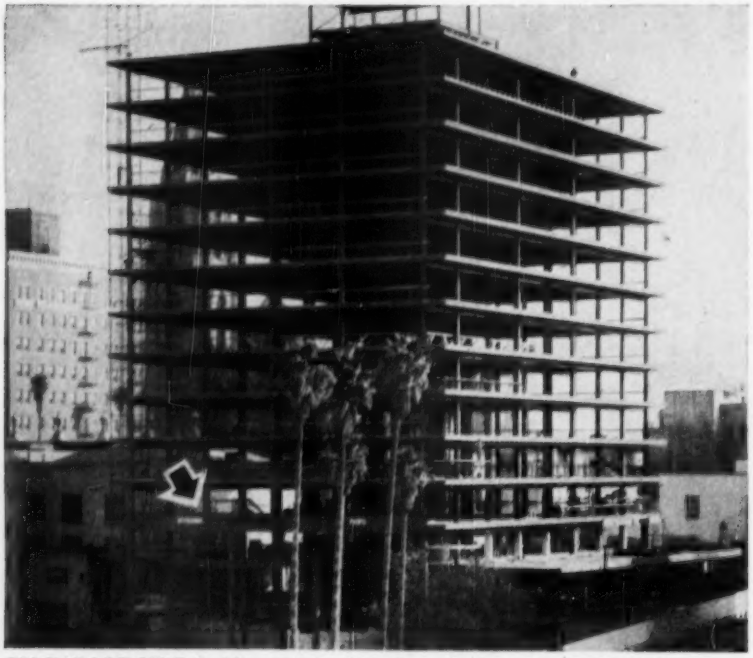
Contini etimates that these louvers ward off enough solar heat to reduce the air-conditioning load by 80 tons. Also, they preserve the open feeling inside by eliminating the need for blinds, which would tend to defeat the purpose of the glass walls.

With complete air-conditioning and sun control, there was no need for operating sash. The economy of substituting fixed sash, plus the saving resulting from reduction of the air-conditioning load, practically paid for the louver system.

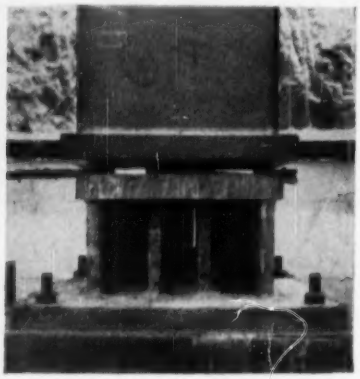
To support the vertical louvers on the east and west walls, 3-ft aluminum outriggers cantilever at each ceiling level from the mullions and carry a continuous aluminum fascia to which the louvers are attached.

The 3-ft offset of the vertical louvers from the building wall provides enough room for horizontal movement of a light traveling platform at each floor level for window washing and louver maintenance.

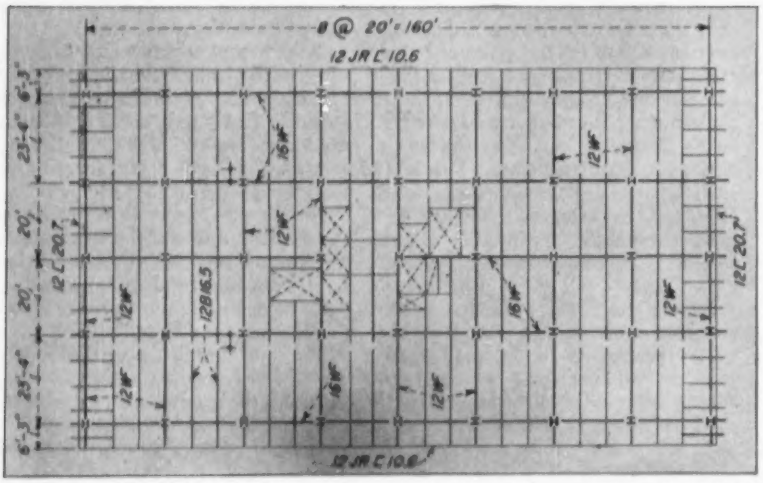
Aluminum window frames face these two sides of the building. At



ON GARAGE SIDE, building switches from five columns to four at plate girder (arrow) to conform to layout of garage (not framed when photo was made).



PIN JOINTS connect columns to plate girder (left) and column base (right).



TYPICAL FLOOR PLAN shows continuity of beams. They cantilever beyond all outside columns and continue over intermediate supports to mid-bay shear splices.

floor edges, colored enameled or glass panes are used. Immediately above each floor is a 3-ft band of obscure glass. The remainder is clear glass.

Similar outriggers on the north and south sides support the horizontal canopies. Window frames on these two sides occur only in clear glass areas corresponding to those on the other walls. Below the windows and at floor edges are plaster spandrel walls.

• **Lightweight aggregates used**—Spandrel wall construction is lightweight, vermiculite concrete, 4 in. thick, sprayed from inside the building on paper-backed metal lath. The lath is supported by light channels attached to the building frame. Vermiculite was also used in the fireproofing plaster applied to the structural steel, and lightweight aggregate was used in floor concrete.

The floor slabs were cast on corrugated steel sheets, which were then left in place. The general contractor estimates that he saved about five weeks by using the corrugated steel. He could install it as a work floor for his crew and other trades as soon as the floor framing was placed, and he also found it as cheap as other formwork.

• **Forced air cools, heats**—The building is completely air conditioned. Cooling and heating plants in the basement circulate chilled water and low-pressure steam to coils in fan rooms located on all odd-numbered floors from the third up. From the fan rooms, ducts carry hot and cold air to the offices, where mixing dampers blend the air to the desired temperature.

The conditioned air enters and leaves the offices through combination ceiling diffusers, with peripheral supply openings and center returns. The returns draw stale air into the space above the ceiling, from where it goes back to fan rooms. Fan rooms are also equipped to bring in outside fresh air through wall openings and exhaust stale air through a central shaft to the outside above the roof.

Other mechanical and service facilities include five elevators and two stairways in the central core of the building, and a drive-in basement ramp for trucks. Transformers and telephone panels are located in the basement.

Edwardo Contini, chief engineer of Victor Gruen & Associates, was in charge of the project, Torsten Ljung was the engineer in charge of structural design. C. L. Peck, of Los Angeles, was the general contractor. Bethlehem Pacific Coast Steel Corp., of San Francisco, fabricated and erected the steel.

Du Pont explosives go turnpike building in Massachusetts

. . . HELP SPEED EXCAVATION OF NEARLY 3,000,000 CUBIC YARDS OF MATERIAL

1 Mud and rock create difficulties on the Millbury-Auburn section of the Massachusetts Turnpike. C. J. Langenfelder & Son, Inc. (Baltimore, Md.), is the contractor.

2 Drilling holes in rock cut. Rock accounts for about 25% of nearly 3,000,000 cubic yards of material the contractor has to excavate.

3 Loading Du Pont 40% Red Cross Extra (2 x 16), high-water-resistance formula, into holes. This all-around dynamite has the necessary power and water resistance.

4 Blasting foreman fires the shot with a Du Pont CD-48-1 Blasting Machine. This machine fires up to 1,200 holes and eliminates need for erection and maintenance of blasting generators and permanent firing lines.

5 Well-broken rock is the result of this typical blast. There are very few chunks in the pile, which means that the broken material can be quickly and economically removed. Reliable Du Pont 40% Red Cross Extra dynamite comes through time after time with performances like this one!

The dependable Du Pont line of explosive products and equipment is known and respected throughout the world. Why not see how *you* can benefit from it? Have your Du Pont representative answer your questions, or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

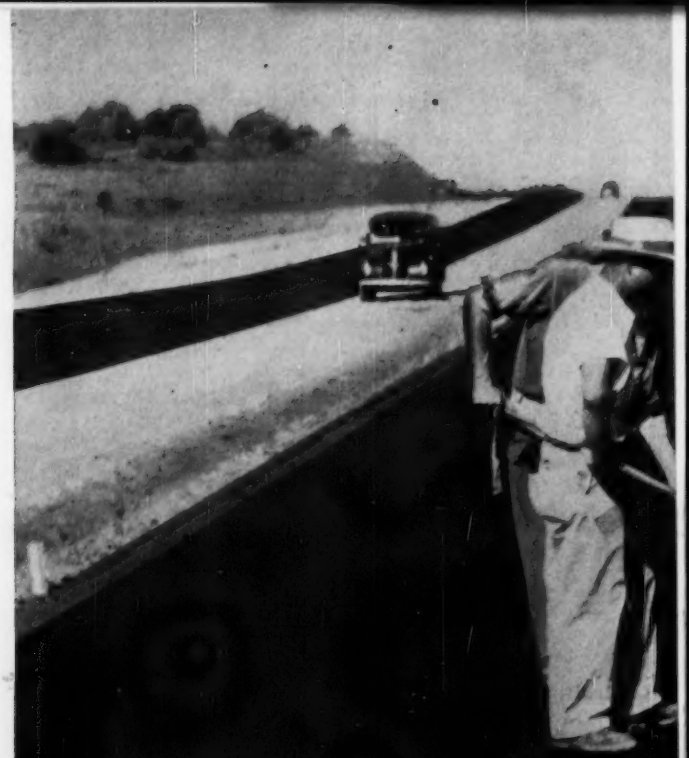
DU PONT BLASTING AGENTS

Blasting Supplies and Accessories

DU PONT

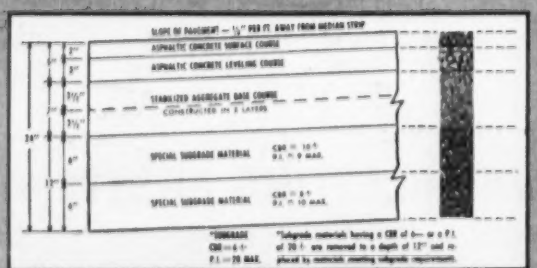
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



On goes ASPH for economy

ENGINEERED FOR RUGGED WEAR



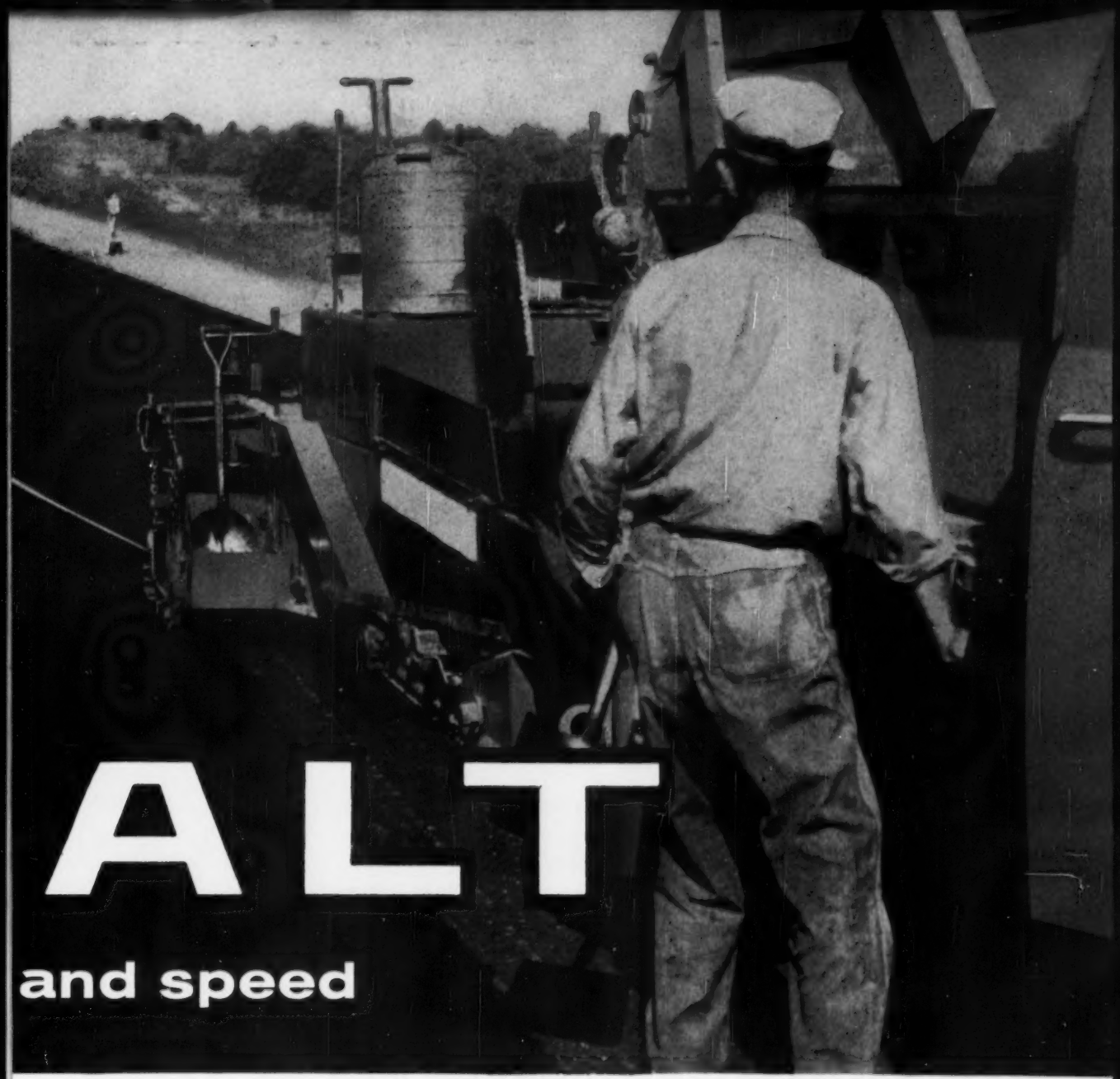
Cross-section shows whole pavement structure of typical Turner Turnpike section. Large photograph shows laying of the 2" asphalt wearing course over the 3" asphaltic concrete leveling course. Both are compacted to not less than 92% of theoretical density. (96% lab.)

Asphalt-paved Turner Turnpike (Oklahoma City to Tulsa, 88 miles) is an engineering and financial success.

It's a 28,800-pound-axle load structure (see cross-section) engineered for maximum durability and smooth, safe riding. Its cost was low . . . only $431,818 per mile. It was laid fast . . . 29 months from the time sod was broken. Its safety record is enviable . . . about ½ the national fatality average. Its revenues are way up . . . $1,546,319.94 over operating expenses and bond interest from the opening, May 1953 to November 30, 1955.

People liked this Turnpike Wanted more like it

Oklahoma highway authorities responded quickly to the success of asphalt-paved Turner Turnpike. By



ALT

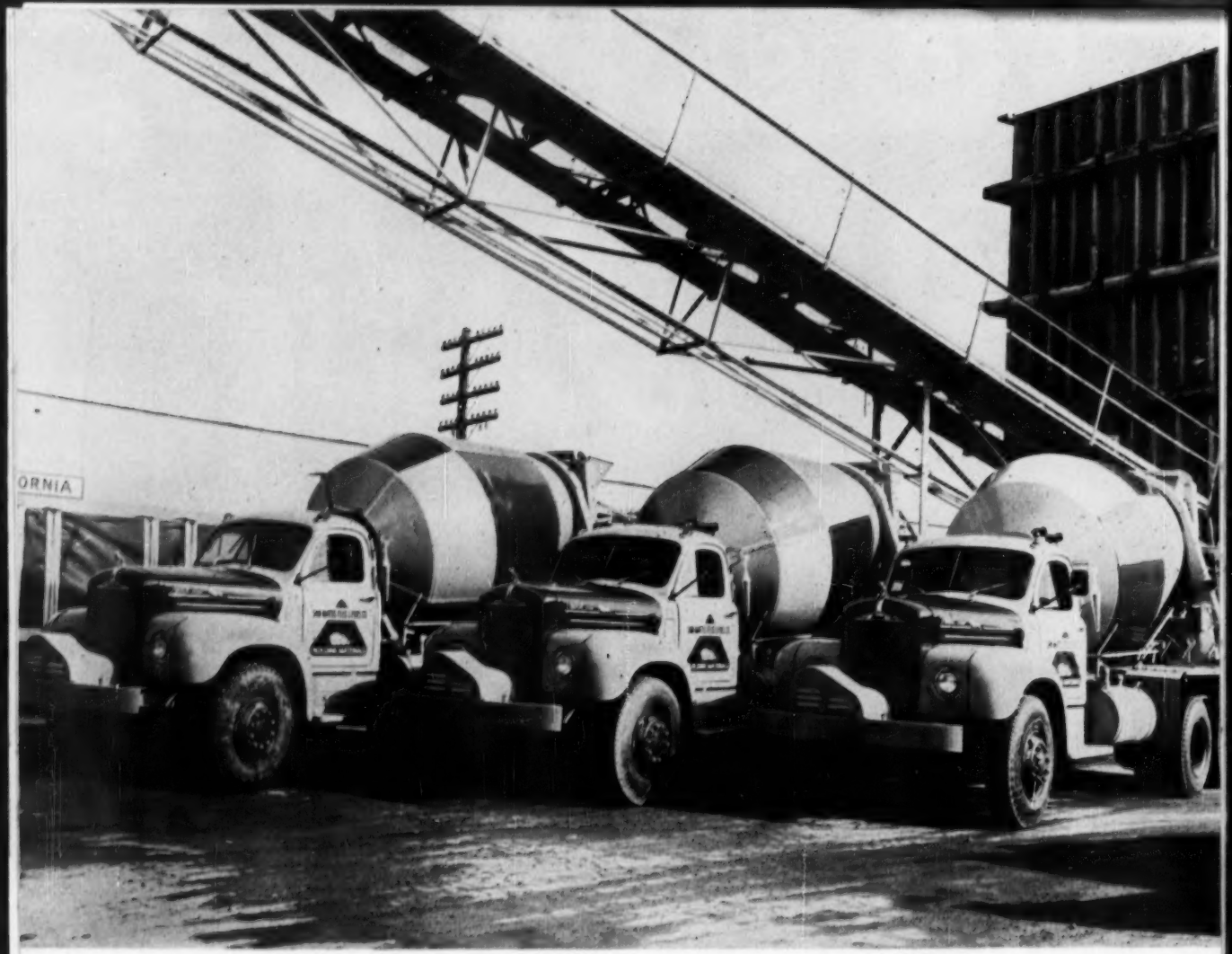
and speed

June of 1955, work was under way on the 88.5-mile northeast extension.

Modern, heavy-duty asphalt construction like this has proved ideal for turnpikes and primary roads. People like driving on asphalt "ribbons of velvet smoothness". Taxpayers like its low costs. You'll like its design versatility, its speed and ease of construction, its rugged durability. Often, local aggregate can be used.

Modern highway design calls for Asphalt pavement—it's rugged, durable, smooth, safe and economical. Make your next design asphalt.

THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland



These three Mack model B421S concrete mixers are part of the big San Mateo Feed & Fuel Company's fleet. Macks have helped set the pace for their growing operation since 1951.

compared to all other makes in our fleet . . . MACK's performance and maintenance records were outstanding . . . that's why we bought 35 more

—R. C. Hughes, President
San Mateo Feed & Fuel Company
San Mateo, California

Proof of performance is what Mr. R. C. Hughes, president of San Mateo Feed & Fuel Company, demanded before buying 35 new Macks—21 model B421S mixers, and 14 model B30P dumpers.

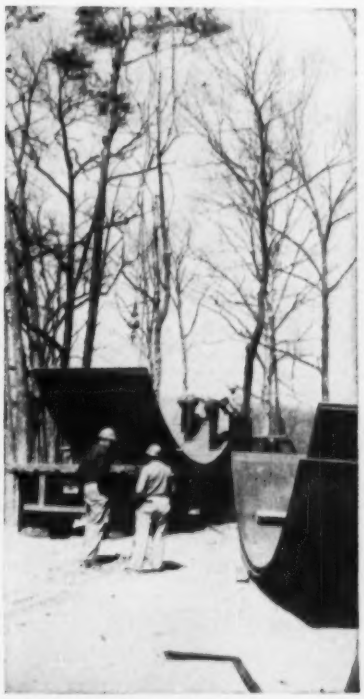
"We relied on our records," commented Mr. Hughes, "when the time came to make a major decision for modernizing our fleet. The answer was clear . . . in our mixed fleet Macks were the stand-outs for fuel economy, low maintenance cost, and over-all earning capacity.

"We bought our first six Macks in 1951, and added 14 more in 1952. Now, with the addition of 35 new units, our fleet contains 55 Macks. We consider our big investment in Macks an important factor in building increased profit into our rapidly growing business."

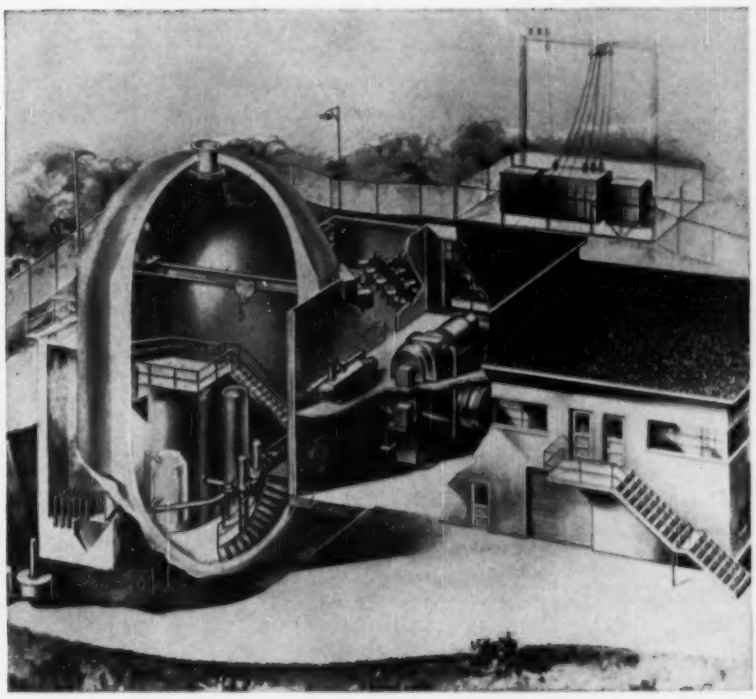
Get the facts on Macks before you buy another truck. See your Mack Branch or Distributor and find out how Mack can give you top performance and economy in every trucking operation.

4014

MACK TRUCKS, INC., Plainfield, New Jersey. IN CANADA: Mack Trucks of Canada, Ltd.



From these pieces small, light enough to be air-carried . . .



. . . **This power reactor** is being assembled at Fort Belvoir to furnish a training facility for Army personnel.

The Army Unpackages Its A-Power

Atomic energy from within a reactor vessel no bigger than an industrial water-heater will be generating steam to turn a conventional 2,500-kw turbogenerator at Fort Belvoir, Va., early next year. Called the Army Package Power Reactor because its major components could be transported by plane, it is now being "unpackaged" and put together by constructors at the Corps of Engineers Research and Development Laboratories at this Army post.

Being built by the Atomic Energy Commission to demonstrate what the Army can use as a remote power installation APPR-1 seems to be what the Army wanted.

The Army wanted an atomic energy unit, and it got the Army Package Power Reactor.

Alco Products, Inc., of Schenectady, N. Y., (formerly American Locomotive), the designer and its subcontracting construction agent, Stone & Webster Engineering Corp., have come through with a plant that has the following features:

- It would meet the needs of a remote military base.
- Also will meet all safety requirements for a site 20 miles from Washington, D. C.
- It is being built to contain the "maximum credible" accident.
- It is a practicable training facility for troops who will eventually operate such plants in remote locations.
- It demonstrates that a nuclear power plant can be built of components all transportable by air.

At its present stage of construction, the APPR-1 is a conventional bolted-steel frame building to house a condenser, a turbogenerator, control room, office space, lab space and classroom.

But there's one big difference. At one end of the two-story structure there stands a cylindrical steel tank with domed top. This is the vapor container, the chief distinguishing visual characteristic of the plant.

This is the structure into which will go the reactor vessel of a pressurized water nuclear plant. This is the structure of steel and concrete that is figured to contain the maximum credible incident and to shield any accompanying radiation.

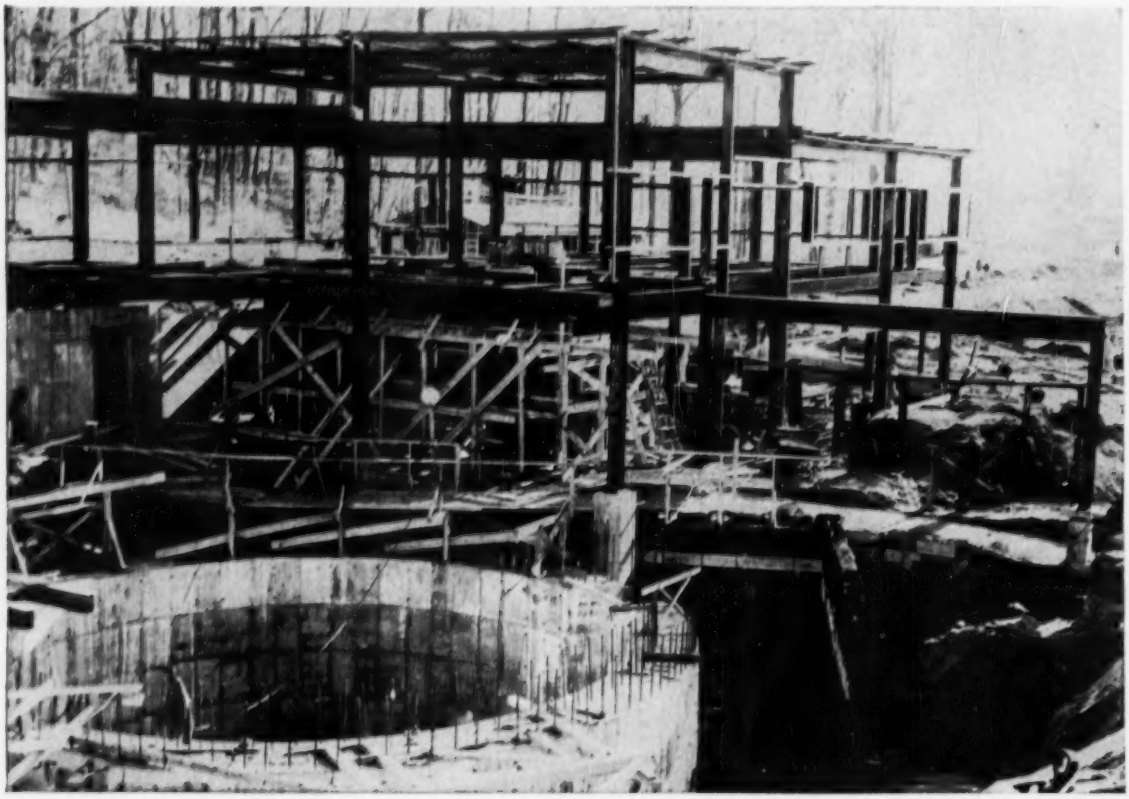
The vapor container is a welded steel cylinder 36 ft in diameter and 64 ft high. Its plate thickness is $\frac{7}{8}$ in. It has hemispherical top and bottom of $\frac{1}{2}$-in. plate, and it sits in a mat-supported reinforced concrete ring.

For Bethlehem Steel Co., geld fabrication of the vapor container was no great task. It is standard construction. But in the words of Ernest Cofrancis, project engineer for Alco, "It's particular construction."

What Mr. Cofrancis refers to especially is the care that must be taken in welding; the vapor container must naturally be vapor-tight. Not only were extra pains taken in welding, but weld inspection by radiography, ordinarily used just as a spot-check, was here utilized by Pittsburgh Testing Labotatories on every inch of weld.

Now that the steel container is completed it will be covered outside with a 3-ft thickness of standard 3,000-psi concrete for shielding. It will be lined inside with a 2-ft concrete thickness to protect the steel container from flying missiles should the unexpected accident ever take place within.

The vapor container will now be



Reactor Foundation is a concrete ring wall on a mat footing. Powerhouse is conventional bolted steel-frame building.

fitted out for the core of the reactor, described as heterogeneous, water-cooled and moderated. Its core will be roughly a cylinder 22 in. in diameter and 22 in. high. It is a bundle of 40 fuel elements, each a 2¾-in. square rod containing enriched uranium in stainless steel.

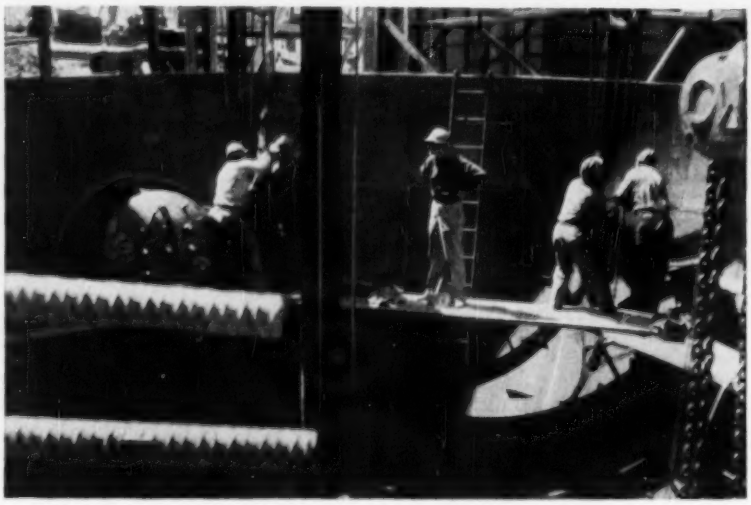
Pressurized water (at 1,200 psi to prevent boiling) will circulate through the reactor at a 4,000-gpm rate in a primary loop. It will enter the reactor at 431 F and leave at 450 F to give off heat through a steam generator.

Steam at 200 psia and 407 F will be generated at about 34,000 lb per hr and fed to the turbine.

APPR-1 will have a condenser actually too large to be air-transportable. The condensor was exempted from the weight limitations because the turbo-generator size required at Fort Belvoir is larger than that needed at a remote site.

Aside from the condenser, the other two components excluded from the weight limitations are the turbine and the generator.

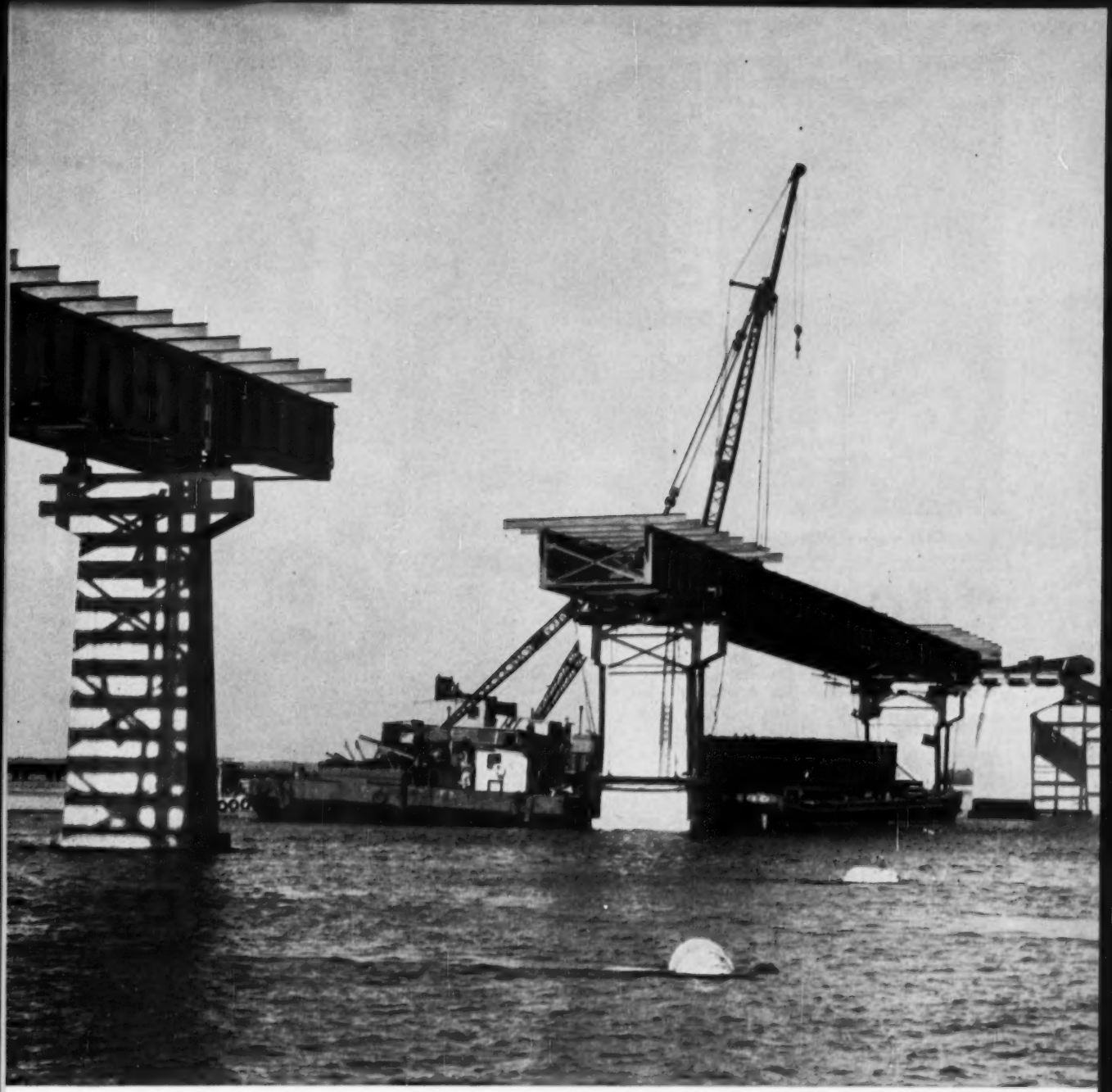
Outside of the heavily constructed and shielded vapor container, the only other construction that would distinguish this as a nuclear powerplant is concrete shielding around the spent



Steel Bowl is bottom of cylindrical vapor container. Workers on eight chain hoists pull it up on temporary steel frame so that seams can be welded underneath.

fuel storage pit and the water treatment equipment. When the reactor is refueled, spent fuel elements will be removed under water through a transfer tube to a water-filled concrete storage pit outside the vapor container. When stored long enough to be safe for handling without excessive shielding, spent fuel will be shipped to a reprocessing plant.

A 5,000-gal tank of water from Ft. Belvoir's filtered supply will feed the plant. An evaporator will take impurities from that which goes to the secondary system side of the steam generator. Condenser cooling water



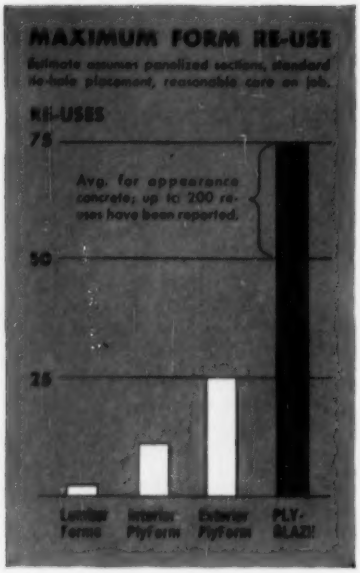
Wire Rope at Work—New Jersey's great Garden State Parkway has the incredible total of 282 bridges; and the photograph above shows the last of them nearing completion. It is the Great Egg Harbor Bay Bridge; an impressive span just west of Ocean City. The steelwork, more than a half-mile long, weighs some 2500 tons.

The picture was taken just after two 63-ton girders, completing a 180-ft span, had been erected. The derrick that did the hoisting was equipped with a 90-ft boom, a 43-ft mast, and Bethlehem Purple Strand wire rope. As always in lifts of this nature, a great responsibility rested upon the rope, but the sinewy Purple Strand was more than equal to the job. Taking the loads in stride, it made the dramatic lifts seem routine.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING



50 to 75 is a good average, but with care you can get up to...

200 RE-USES with PLYGLAZE®

CONCRETE FORM PANELS

PLYGLAZE'S tough, hard surface stands up indefinitely under repeated concrete pourings. PlyGlaze forms are worn out only when the panels are cut into unserviceably small pieces. With proper design and care you should get 50 to 75 re-uses. Actually, *over* 200 have been obtained—even then PlyGlaze continues to form good-looking concrete.

TREE LIFE FOREST PRODUCTS
Another member of the famous Tree Life Family of Forest Products
Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
Top-quality Exterior plywood (EXT-DFPA). Standard panel sizes.
PLYGLAZE EXT-DFPA

ST. PAUL & TACOMA LUMBER CO.
Dept. ENR, Tacoma 2, Wash.
Please send free PlyGlaze literature.

Name .....

Address .....

City ..... Zone ..... State .....

Completed Vapor Container will have 3-ft cover of concrete outside and a 2 ft lining, inside welded-steel plate to contain maximum credible accident.

. . . Reactor for the Army

will come straight from the Potomac and discharge directly back.

Make-up water for the primary loop will be taken from the condenser hotwell. It will go through a demineralizer and a degasifier before entering the primary loop, a closed system in which water is to be constantly repurified and reused. At intervals of perhaps a few months, demineralizer cartridges will have to be removed and disposed of.

Lt. Col. William Gribble, of the Engineer Corps' nuclear group has this to say of "hot" wastes from the plant:

- Solid wastes will be chiefly the spent fuel for which there are ample containment and handling provisions.
- Radioactive liquid wastes will be non-existent. The only water to be contaminated measurably, that in the plant's primary loop, will be recycled continuously.
- Gaseous contamination has no way of getting out of the vapor container.

As noted above, resin beds of water plant demineralizers will pick up a degree of contamination, but not so much that the spent resins could not be buried in a shallow hole anywhere on the plant site.

Features of the APPR which were required to meet AEC's safety standards represent only a moderate portion of the plant design and will be inexpensive relative to overall plant cost.

Experience with APPR-1 is quite apt to influence modifications in design of APPR-2—wherever and whenever that might be built. But the Army does not expect any radical design changes would be made as the result of what's been learned so far. The Ft. Belvoir plant should meet the Army's needs for a training facility.

If a package power reactor were built in some remote spot, a Quonset hut might be all the building needed; but in its essentials, it would not change much from the plant now being built. It would still need the vapor container to safeguard operating personnel, at least at the present stage of reactor technology.

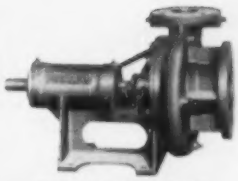
Wherever APPR-2 might be built, it will present no construction problem that U. S. contractors can't handle. Experience with APPR-1 to date has proved that.

How to Save

TIME \ MONEY \ ENERGY

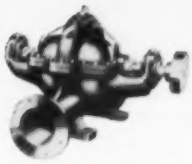
TYPE PE FLUIDYNE INTEGRAL HP PUMPS

A complete line of electric close-coupled general purpose pumps. Threaded or flanged connections. Capacities: to 800 gpm; heads: up to 260 feet; motors: up to 50 h.p.



TYPE PB FLUIDYNE GENERAL PURPOSE PUMPS

Flexible coupled, single-stage, end suction, general purpose pumps. Rugged and durable. Capacities: up to 5500 gpm; heads: up to 260 feet; motor: up to 150 h.p.



TYPE A GENERAL PURPOSE PUMPS

For application to the widest variety of pumping conditions. Single stage split case design. Capacities: up to 70,000 gpm; heads: to 300 feet. All types of drive.

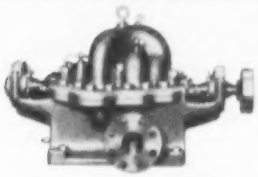
TYPE AS GENERAL PURPOSE PUMP

The centrifugal pump with mechanical shaft seals that eliminate the packing box. Up to 4" in discharge sizes. Capacities: up to 750 gpm; heads: up to 210 feet.

BY BUYING FROM THE COMPLETE LINE

VERTICAL DEEP WELL TURBINE PUMPS

For application to deep well pumping. Lifts from 1000 feet or more. Capacities: up to 30,000 gpm. H.P. range: up to 1000 h.p. oil and water lubricated types. Widest range of sizes.



TYPE TU BOILER FEED AND PROCESS PUMP

2-stage high pressure pump for water and other liquids. Capacity: 50 to 3500 gpm; heads: up to 600 feet. Internal cross over is built into top half of pump case.

TYPE TUT MULTI-STAGE PUMPS

3, 4 and 5-stage pumps for water handling and process services. 1" to 5" discharge sizes. Capacity: up to 1350 gpm; head range: up to 1600 feet. Split case design.

INDUSTRIAL SERVICE PUMPS

For application to pits, sumps, basins, reservoirs and other surface water sources. Same capacity as deep well turbine above. H.P. range: up to 2500 h.p.

HYDRO-LINE PUMPS

An enclosed, close-coupled, vertical centrifugal process pump for handling petroleum hydrocarbons, where NPSH is limited. Capacities: to 6000 gpm; heads: to 1500 feet.

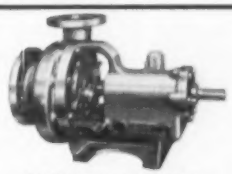
HI-LIFT PUMPS

The unique positive displacement deep well pump that literally squeezes water upward. Capacity: 10 to 55 gpm; lifts: up to 1000 feet. For wells 4" in diam. and up.

PEERLESS PUMPS

DISTRIBUTORS & SALES OFFICES

Everywhere!



TYPES DL AND DM PROCESS PUMPS

Single stage, end-suction chemical process pumps with maximum interchangeability of components. Open or enclosed impellers. Packing gland or mechanical seal. Capacities to 800 gpm. Heads to 430 feet. Temperatures: to 450° F.

SELF-PRIMING PUMPS

Rugged, compact, portable self-priming pumps manufactured to AGC specifications, seven models and types to choose from providing 4,000 to 30,000 gallons per hour.

FOR ALL YOUR PUMPS FOR ALL YOUR NEEDS — LOOK TO PEERLESS FOR:

THE COMPLETE LINE —
THE QUALITY LINE —
THE DEPENDABLE LINE —
THE ECONOMICAL LINE —
THE TIME-SAVING LINE!

PEERLESS PUMPS

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

PEERLESS PUMP DIVISION

FOOD MACHINERY AND CHEMICAL CORPOPORATION

Address inquiries to Factories at:
Los Angeles 31, California and Indianapolis 8, Indiana.
Offices: New York; Indianapolis; Chicago; St. Louis; Plainview and Lubbock, Texas; Fresno, Atlanta; San Francisco, Los Angeles; Phoenix; Albuquerque.

MAIL COUPON FOR BULLETINS

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
301 West Avenue 26, Los Angeles 31, California

Check Literature Desired by Type

☐ TYPE PE B-2300 ☐ TYPE PB B-2300 ☐ TYPE A B-1300 ☐ TYPE AS B-1350 ☐ TURBINE PUMP B-141

☐ TYPE TU B-1400 ☐ TYPE TUT B-1400 ☐ INDUS. SERVICE B-100 ☐ HYDRO. LINE B-1700

☐ HI-LIFT B-142 ☐ TYPES DL-DM B-1600 ☐ SELF-PRIMING B-2000

NAME _____

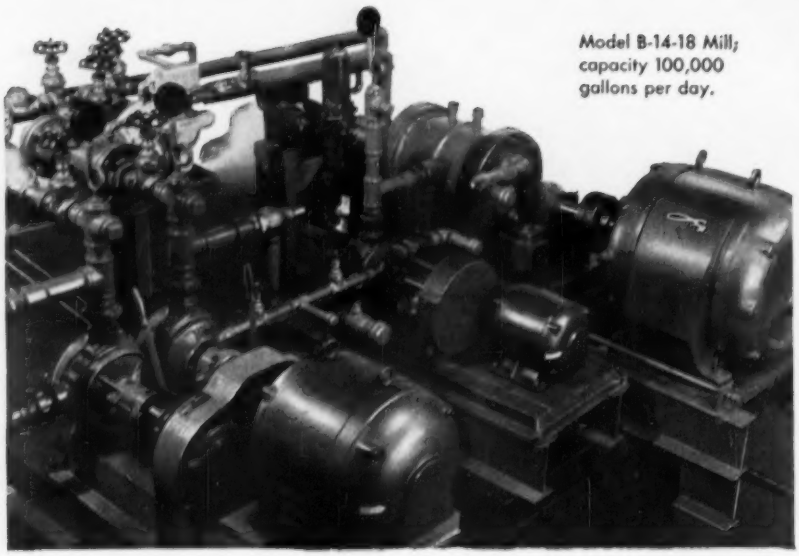
COMPANY _____

ADDRESS _____

CITY _____ STATE _____

ENR

WEATHER-PROOF ASPHALT EMULSIONS
FOR BETTER PAVING



Model B-14-18 Mill; capacity 100,000 gallons per day.

QUALITY-CONTROLLED PRODUCTION
through mills of the type illustrated above

Besides producing asphalt emulsions which meet all specifications of A.S.T.M., A.A.S.H.O., Asphalt Institute, and the various state, county, and city public works departments... McConnaughay Licensees manufacture and recommend Weather-Proof Emulsions with these special qualities:

1. *Resistance to water during and after construction.* Weather-Proof Emulsions are not washed off during sudden or prolonged rains occurring immediately after mixing or spreading. Finished pavements are also resistant to water.
2. *Resistance to heat.* Weather-Proof Emulsion Mixtures do not bleed or soften during hot weather. Mixtures of emulsion and aggregate show great strength at 140° F.
3. *Resistance to cold.* Weather-Proof Emulsion Mixtures are tough and resilient instead of brittle at temperatures below freezing.

Complete test procedures and specifications will be mailed upon request. You can always be sure of getting accurate information and fast, dependable service on asphalt emulsions and mixes by calling any of the McConnaughay Licensees listed. Take advantage of this exceptional service. Get in touch with your nearest McConnaughay Licensee or contact...

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1 – Penetration Macadam. 2 – Open-Graded Plant Mix, 3 – Open-Graded Road Mix, 4 – Dense-Graded Plant Mix, 5 – Dense-Graded Road Mix, 6 – Mat Coat, 7 – Seal Coat, 8 – Sand Mix, 9 – Sand Honing, 10 – Patching, 11 – Mastic-Mix, 12 – Driveway Construction.

McCONNAUGHAY LICENSEES
Operating K. E. McConnaughay Emulsified Asphalt Plants

1. Bituminous Materials Co. *Escanaba, Michigan*
2. Berkshire Asphalt Co., Inc. 620 Berkshire Ave., *Springfield, Mass.*
3. James Huggins & Sons, Inc. Medford & Commercial Sts. *Malden 48, Massachusetts*
4. C. C. Plumb, Elmwood Station P. O. Box 65, *Providence 7, R. I.*
5. C. C. Plumb *Portland, Connecticut*
6. Albany Asphalt & Aggregates 75 State St., *Albany, New York*
7. Knight Paving Products, Inc. 1655 Union Rd., *Gardenville, N. Y.*
8. Knight Paving Products, Inc. Vine Street, *Ithaca, New York*
9. Knight Paving Products, Inc. 1980 East Ave., *Rochester 10, N. Y.*
10. Knight-Bitumen Corp. *Watertown, New York*
11. Seaco, Incorporated 2700 Industrial Drive, *Columbia, S. C.*
12. E. A. Mariani—Emulsified Asphalt Hooker's Point, *Tampa, Florida*
13. Pan-Am Southern Corporation P. O. Box 2, *New Orleans 6, La.* (Also serving Alabama and Mississippi)
14. Asphalt Products Co., Inc. Powell Ave., *Nashville 11, Tenn.*
15. Bituminous Materials Co. P. O. Box 267, *Terre Haute, Ind.*
16. Wabash Valley Asphalt Co. *Terre Haute, Indiana*
17. Brookman Construction Co. 17th & Gharkey Sts., *Muncie, Ind.*
18. Fauber Construction Co. *Lafayette, Indiana*
19. Asphalt Materials & Construction, Inc. 960 E. 22nd, *Indianapolis 2, Ind.*
20. Ready-Mix Asphalt, Inc. P. O. Box 882, *Fort Wayne 6, Ind.*
21. Walsh & Ikeler R. R. #2, *Gary, Indiana*
22. Bituminous Materials Co. 416 S. Water St., *Jackson, Mich.*
23. Bituminous Materials Co. 318 Atlantic St., *Bay City, Mich.*
24. Emulsions, Inc. *Lawrenceville, Illinois*
25. Bituminous Materials & Supply Co. 415 Maple St., *West Des Moines, Iowa* Plants:
26. *Spirit Lake, Iowa*
27. *Iowa City, Iowa*
28. *Menlo, Iowa*
29. Emulsified Asphalt Co. *Kuttawa, Kentucky*
30. Doherty and Swearingen Co. 53 Main St., *Yarmouth, Maine*

Eastern Representative: John A. Dow 157 Church St., *New Haven 10, Conn.*

K. E. McCONNAUGHAY LAFAYETTE INDIANA
EMULSIFIED ASPHALT PLANTS AND PROCESSES

SHURE-SET, U.S.-developed hand tool for driving nails and threaded studs into concrete, metal and masonry, and . . .

. . . ROBOT, its German counterpart, will speed up many fastening jobs too light to require powder-actuated drivers.

Hand Tools Sink Concrete Studs Fast

Hand tools for driving fasteners into concrete, masonry and metal have just been introduced independently by two unrelated firms. Olin Mathieson Chemical Corp. calls its model Shure-Set. The other version, a German tool, manufactured by Bettermann Elektro and imported by John K. Gieling, is called Robot.

Each consists essentially of a cylindrical barrel and a piston or driving pin. The fastener is gripped in one end of the barrel while the piston projects from the other. With the flat base at the fastener end of the barrel positioned against the work surface, the operator strikes the piston with a hammer to drive the fastener home.

The fasteners are of two main types, nails and threaded studs, and are made in a variety of sizes and lengths.

Designed to handle tasks too heavy for hammer and nails but not heavy enough to require powder-actuated drivers, Shure-Set and Robot are expected to speed up many jobs for carpenters, masons, electricians, plasterers, metal-workers and other craftsmen. Olin Mathieson Chemical Corp., 460 Park Ave., New York 22, N. Y.; John K. Gieling, 300 Fourth Ave., New York 10, N. Y.

New Type Pole Trailer

What the manufacturer claims to be a new and unique design of pole trailers has been introduced. The complete line now features a fabricated box-type pole trailer reach, the rugged box frame construction assuring maximum strength required for specialized hauling. The machines are available in 15, 20 and 25-ton full rated capacities. Talbert Trailers, Inc., 7950 W. 47th St., Lyons, Ill.

Three-Quarter Yard Bucket Added to Bucyrus-Erie Line

A new ¾-yd clamshell type material handling bucket, made for use with the truck-mounted H-5 hydro crane is now available.

Designed for handling sand, gravel and other bulk materials, the manufacturer claims it is faster operating than conventional cable-operated buckets, due to foot-control selector valves that enable the operator to channel all horsepower into digging.

With two double-acting hydraulic rams forcing the bucket closed, the manufacturer says penetration is better and payloads are bigger. Bucyrus-Erie Co., S. Milwaukee, Wis.

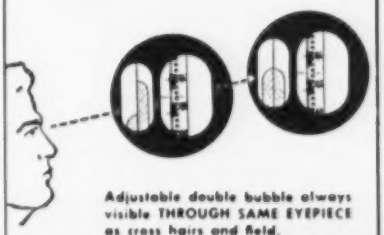
(*New Products continued on page 52*)

SURVEYORS!

Save time

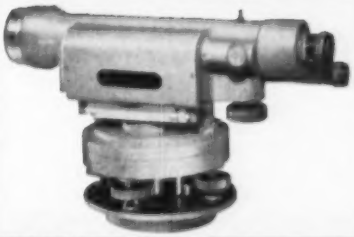
Save money

NEW LEVEL with



Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.

DOUBLE BUBBLE



is "MISTAKE FREE"

- No need to turn telescope during leveling
- American type—erecting eyepiece, 4 leveling screws
- Unbelievably fast and accurate, yet simple-to-use. Economical!

Mail this coupon for details

FENNEL

INSTRUMENT CORP. OF AMERICA
45-22 Pearson St., Long Island City, N. Y.

Please send me Booklet J with information on Fennel . . .

☐ Double bubble ☐ Alidades
☐ Other levels ☐ Collimators
☐ Transits ☐ Stands
☐ Combinations ☐ Tripods
☐ Theodolites ☐ Repair of present instruments, (any make)

NAME.....

ADDRESS.....

.....

Do You Have This PIPE PROTECTION PROBLEM?

Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

You'll find the ANSWER with TAPECOAT® ... the Quality Coal Tar Coating in Tape Form

TAPECOAT is the widely-accepted alternate material that is equivalent to mill-applied hot coal tar protection. With this easy-to-use material, protection can be applied in the field by your own men, because technical know-how, kettles and special crews are not required. You save time and money while providing the long-life protection called for.

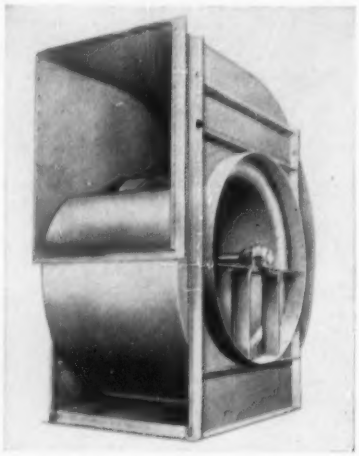
TAPECOAT is easily applied, using a torch to soften or bleed the pitch which gives both bond and protection. Available in widths from 2" to 24", it is spirally wrapped or cigarette wrapped around pipe, pipe joints, couplings, conduit, cable, and insulated piping.

Write for illustrated brochure.

The TAPECOAT® *Company*

Originators of Coal Tar Coating in Tape Form

1551 Lyons Street
Evanston, Illinois



High Efficiency, Low Cost For New Centrifugal Fans

High efficiency and extremely low operating cost are among the advantages claimed for a new line of centrifugal fans designed for high-pressure air conditioning, industrial-process ventilation, and vehicular tunnel ventilation.

The Series 6000 Silentvane fans rely on airfoil type blading to achieve 92% peak mechanical efficiency, 88% static efficiency in air movement, and less noise.

The sixteen fan models in the new line are available from 27 to 108 in. in diameter. Fans are designed for direct connection to conventional squirrel-cage induction motors. Inlet vane control, either manual or automatic, is available for regulating air output over a wide range of operating conditions. Westinghouse Electric Corp., Sturtevant Division, Dept. 118, 200 Readville St., Hyde Park, Boston 30, Mass.

Cold Joint Sealing Machine Has Chopping Action Valve

A new joint sealer for applying cold joint sealing compounds to newly sawed control joints in highways and airport installations has been announced by Clipper Manufacturing. The CP-300 is said to be a ready-to-use unit requiring only connection to a suitable air compressor. It is equipped with an air pump consisting of a 6-in.-dia air cylinder and piston.

A special feature is a check valve known as the "chopping check valve" which consists of two cylindrical surfaces with slots, moving against each other to produce a cut-off or chopping action rather than the commonly used ball check valve. Manufacturer says that this new valve's action will cut stringy fibers as well as push small clay or sand particles out of the way. Clipper Manufacturing Co., Suite 642, 2800 Warwick, Kansas City, Mo.

Concrete Floor Treatment Now Comes in Colors

A concrete floor glaze that originally was furnished in amber color only is now available in all colors and shades but blue. So far brick red is most popular.

Called Demicon Concrete Floor Glaze, the product is a synthetic-resin varnish designed to penetrate concrete floors and offer a highly polished wear-resistant surface. One gallon covers 350 to 400 sq ft.

Recommended for exposed concrete surfaces such as garages, cellars and porches, the material is claimed to be impervious to moisture and resistant to lime. According to the manufacturer, it will stand washing three times longer than any known concrete floor varnish. Since it contains a fungicide, it is claimed to be particularly effective in damp places. Demarest Engineering Co., 790 Broad St., Newark 2, N. J.

Mower Clears 10-ft Swath; Tractor-Pulled Offset Design

Tractor-propelled, the new Twin Brute, with offset design, cuts a 10-ft swath. The manufacturer claims the machine will cut under branches and close into corners, making it possible for road crews to do all heavy cutting jobs automatically. With an adjustable cutting height of 3 to 14 in., the machine will cut, shred, and pulverize weeds, stubble, brush and growth of all kinds.

Features of the machine include an overrunning clutch that gives the operator complete control, and furnishes additional power to maintain the blade speed while changing gears on the tractor or maneuvering in dense and difficult areas. The BMB Co., Inc., 319-21 New York Ave., Holton, Kan.

Concrete Vibrator Operates On Normal House Current

A low-cost Uni-lectric concrete vibrator, said to be capable of operating from any on-site 110-v current, has been especially designed for use on smaller concreting jobs.

Known as Model UCV-9, the new motor-inhead concrete vibrator is lightweight and easily handled by one

"Faster take-off!"

"Faster on the hills!"

"Far less shifting!"

That's what 100 fleet operators, who tested them in 2,500,000 on-the-job miles, said about the

GREAT, NEW INTERNATIONAL V-8's!

We knew we had a great new line of heavy-duty V-8's after 30,000 hours of testing and developing in the laboratory. We proved it to our own satisfaction in 1,000,000 miles on the test track. But the 100 fleets who really gave these power-packed huskies a going over, on all kinds of terrain, on all kinds of jobs, really put on the final stamp of approval with their terrific enthusiasm!

Report after report pointed out that these 206, 226 and 257 hp. V-8's have more *go* at the lights . . . greater sustained speed on the hills . . . offer shorter trip time . . . more ton-miles per gallon . . . higher average road speeds . . . *more power where it's needed most!*

Sounds too good to be true? For convincing proof, send coupon for our booklet that gives all the facts (plus reports from actual owners) on the new International V-Line. Better yet, take the wheel at your INTERNATIONAL Dealer's or Branch, and prove it to yourself.

INTERNATIONAL® TRUCKS

Motor Trucks • Crawler Tractors • Construction Equipment
McCormick® Farm Equipment and Farmall® Tractors

CHECK THESE MODERN V-8 FEATURES!

Hydraulic Valve Lifters • Stress Relieved Cylinder Heads • Full Vacuum Advance Distributor • Fully Machined Combustion Chambers • Positive Type Valve Rotators • Pressure Controlled-Flo Cooling • "Wet" Replaceable Exhaust Valve Guides.

3 Great V-8's	V-401	V-461	V-549
Displacement	400.9 Cu. In.	461 Cu. In.	548.7 Cu. In.
Bore and Stroke	4-1/8 x 3-3/4	4-1/8 x 4-5/16	4-1/2 x 4-5/16
Maximum Hp.	206 @ 3600	226 @ 3600	257 @ 3400
Maximum Torque	355 @ 1800-2000	420 @ 1600	505 @ 2000

GET ALL THE FACTS! Mail coupon today!

INTERNATIONAL HARVESTER COMPANY
P. O. Box 7333, Chicago 80, Illinois

Please send me new free booklet "New Heavy-Duty V-8 Power Where You Need It Most!"

NAME .....

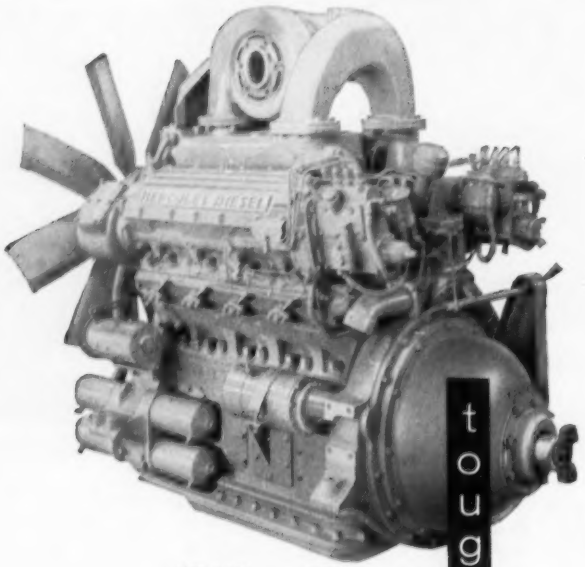
FIRM .....

STREET .....

CITY ..... ZONE ..... STATE .....

THREE MORE HERCULES ENGINES

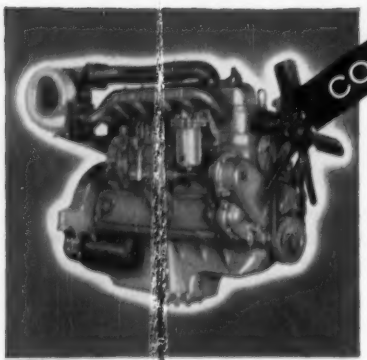
TCD's



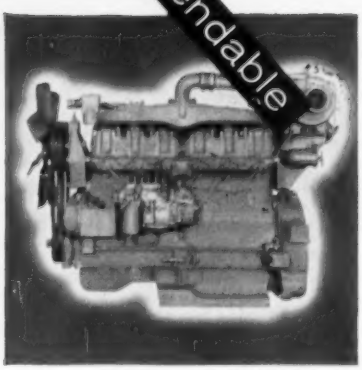
TCD-1468 500 H.P.

compact

dependable



TCD-501 180 H.P.



TCD-895 318 H.P.

Turbo-Charged Diesel

Following the Hercules policy of providing industry with the latest in engine developments, the above Hercules TCD's are available for applications requiring Tough Compact Dependable power. Complete details on these TCD's are available from the factory. Write for Bulletins D-534, D-561 and D-567.

HERCULES MOTORS CORPORATION
CANTON, OHIO

. . . New Products

man. The manufacturer claims that the vibrator is ideal for use in vibrating floor slabs, footings, gutters, thin walls, culverts and driveways, as well as for repairs and small pours on large jobs. Maginniss Power Tool Co., 154 Distil Ave., Mansfield, Ohio.

New Crane Bucket Designed for Rehandling

The latest addition to Erie's clamshell bucket line is a $\frac{3}{8}$ yd extra light rehandler. The bucket—XLR-38—is said to be made particularly for use on 6- to 12-ton equipment.

The manufacturer claims the new bucket is in every respect a scaled-down version of larger Erie equipment, with block and tackle and lever arm action, rigid one-piece welded head and continuous wrap-around reeving. Erie Strayer Co., Geist Road, Erie, Pa.

Portable Road Roller Has Complete Power Steering

A new 3- to 5-ton portable roller has been announced by Littleford Bros., and is said to be the first available with complete power steering. With addition of the new model, No. 160, the firm now offers a line of portable rollers including 2- to 3-ton and 4- to 6-ton models.

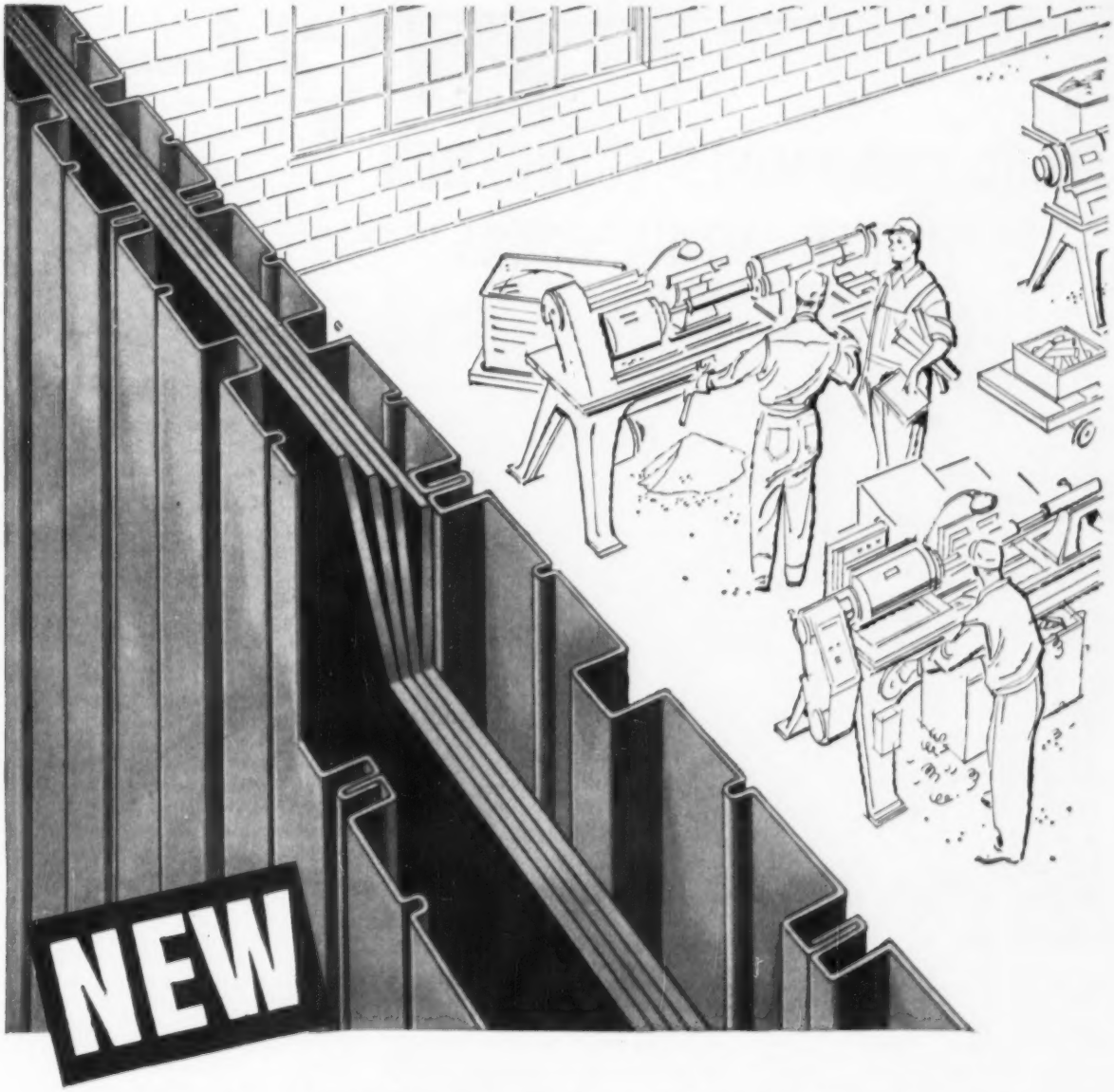
Model 160 is powered by an air-cooled engine and has two reverse speeds, and the trailing wheels can be raised or lowered by hydraulic action. Littlefield Bros., Inc., Box 415-P, Cincinnati 2, Ohio.

Gradall Provides Extra Reach for Material Handling

A new high-boom cradle providing a reach height of 25 ft is now available as an optional feature on all models of the multipurpose Gradall, to make the machine adaptable for material handling.

The new boom retains all operating features of the standard boom, according to the manufacturer—telescoping action, tilt action, attachment wrist action, up and down movement and 360 deg swing. A material handling grapple made for the boom has four times, each individually controlled by hydraulics, and equipped with rubber tips to prevent damage to objects being grasped.

Individual control of the grapple tines permits them to be operated separately, in pairs, or all at the same time, in order to grasp different types of material. Warner & Swasey Co., Cleveland, Ohio.



Fenestra **MOVABLE** Fire Partition Panels

2½-Hour Fire Rating . . . Easy Assembly

Now! A fire wall you can actually move from place to place as the need arises! Fenestra's new Movable Fire Partition Panels eliminate once and for all the problem of building (and relocating) masonry fire walls.

Use Fenestra* Fire Partition Panels to break up large open areas, for paint booths, inflammable storage or wherever else a full 2½-hour fire rated wall is needed. (We will be glad to send you results of a large-scale fire rating test conducted to ASTM standards at Ohio State University and witnessed by Factory Mutual Laboratories.)

Fenestra Fire Partition Panels are easy to erect and move. They're made like a sandwich, with two sheets of galvanized 18-gauge steel on either side of four ½" layers of gypsum-vermiculite board. Ideal for either new or existing buildings.

Call in your local Fenestra representative—he'll be glad to give you complete, interesting details without obligation. Or, send the coupon for literature. *Trademark

Fenestra INCORPORATED | FIRE PARTITION PANELS

Your Single Source of Supply for Windows • Doors • Building Panels

Fenestra *Incorporated*

Dept. ER-7, 2286 East Grand Blvd., Detroit 11, Michigan

Please send me complete information on *Fenestra Fire Partition Panels.*

Name_____

Firm Name_____

Address_____

City_____ State_____

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

FLOOD UNDERMINES FOUNDATION —AID RUSHED WITHIN HOURS

1. DANGER OF COLLAPSE AT THIS CORNER
2. TEMPORARY SHORES

Project: Shoring and Underpinning Machine Shop, Chase Brass Co. Plant, Waterville, Conn.
Engineers: Lockwood Greene Engineers, Inc. New York City

The rampaging waters of Connecticut's Naugatuck River, swollen by Hurricane Diane, had ripped a 20-ft. hole in the Northeast corner of this Chase Brass plant. Collapse threatened.

Emergencies are no novelty to Spencer, White & Prentis—we've handled many of them in our 36 years. In this instance, the rush-call reached us Friday. By Saturday morning remedial work was under way, continuing through the weekend until the structure was made safe.

Maintaining complete facilities and permanent personnel, Spencer, White & Prentis is ready-for-action at all times.

CATALOGUE ON REQUEST

Spencer, White & Prentis

FOUNDATIONS · PILING · UNDERPINNING · SHORING · COFFERDAMS · SPECIAL SERVICES

10 EAST 40th STREET, NEW YORK 16, N. Y.

DETROIT: 2033 PARK AVE. · CHICAGO: 228 NORTH LaSALLE ST. · WASHINGTON, D. C.: TOWER BLDG.
IN CANADA: 700 BAY ST., TORONTO · 2052 ST. CATHERINE ST. WEST, MONTREAL

Publications

Industrial floor armors—The latest methods for extending the life of industrial floors, with Klemp Hexteel and Floorsteel metal gratings, are illustrated in a 12-page specification and installation manual. Hexteel is a rigid mesh placed over the floor, Floorsteel a flexible one. The manual is a specialized report that includes data tables, filler weights, specifications, illustrated installation procedures and specialized uses of the gratings in industries such as the oil, chemical, and railroads. KLEMP METAL GRATING CORP., 6615 S. MELVINA AVE., CHICAGO 38, ILL.

Prefabricated steel buildings—A 6-page, 2-color folder tells how to solve the problem of enclosing big areas by using Armco rigid-frame steel buildings. Illustrations show the method of erection. ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Lead waste plumbing—A 4-page illustrated bulletin provides a specification for lead waste connections for plumbing fixtures with integral traps. The specification includes suggestions on how connections are made to cast iron, copper and galvanized iron. ARCHITECTURAL DEPARTMENT, LEAD INDUSTRIES ASSOCIATION, 420 LEXINGTON AVE., NEW YORK 17, N. Y.

Prestressed concrete tanks—Information on Preload prestressed concrete tanks and standpipes is given in an illustrated 4-page technical bulletin. In addition to 8 photographs and 2 drawings, material covered includes: history of Preload tanks, economics, design characteristics, construction, and procedures for receiving bids. THE PRELOAD CO., INC., 211 EAST 37TH ST., NEW YORK, N. Y.

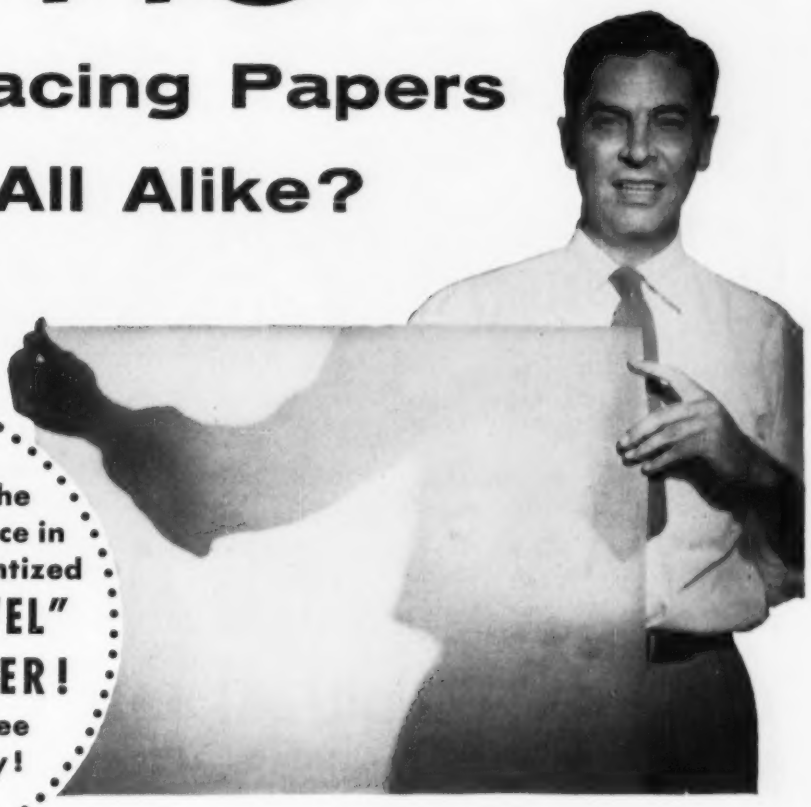
Diesel pile hammers—Two brochures describe the DELMAG diesel pile hammers, a relatively new product on the American market. THE FOUNDATION EQUIPMENT CORP., 100 ELIZABETH ST., NEWCOMERSTOWN, OHIO.

Tractor tracks—"The Right Track" is the title of a new brochure by Caterpillar Tractor Co. to tell the story on track performance and development. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Wire rope—Copies of a new Tiger brand wire rope catalog, give latest information on wide rope. AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., CLEVELAND 13, OHIO.

WHO

Says Tracing Papers Are All Alike?



See for Yourself the Wonderful Difference in Bruning's Transparentized

No. 357 "KOVEL" TRACING PAPER!

Send for Your Free Trial Sheet Today!

Here's a challenge you'll be glad you accepted. Test the tracing paper you're now using against Bruning's general purpose No. 357 "Kovel" Tracing Paper. You'll discover a wonderful difference that will pay off for you in neater, higher quality drawings and cleaner, sharper, faster prints.

You'll like the greater translucency of "Kovel" brought by an improved transparentizing agent and technique of application. Yet you'll find this vellum-type paper exceptionally strong and durable, able to withstand repeated erasures without losing workability. You'll take pure pleasure in the ease with which the beautiful fine-grained surface takes pencil, also accepts ink, gives you smooth, clean, opaque lines. And its faint blue tint eliminates glare. "Kovel" is great for reproduction, whether used for print making immediately or years later. No leaching, no discoloring, no odor . . . even after long periods of storage.

Send for your free trial sheet today. Discover for yourself the big difference, except in price, that has gained "Kovel" acceptance as the finest general purpose tracing paper of its type on the market.

For all the advantages of "Kovel" in a thinner, untinted white paper, try No. 354 "Frenchvel" Tracing Paper. The high translucency of "Frenchvel" makes it ideal for tracing from weak-lined drawings or blueprints and for higher volume reproduction.

And for a Wonderful Difference in a Smooth Surface Paper, try . . .

BRUNING'S No. 350 "VELLUX"

The moment you put pencil, or ink, to this smooth-surface, vellum-type tracing paper, you'll see what a difference quality can make. This permanently white, transparentized paper is unsurpassed for textural uniformity and for fine all-around performance. Prove the difference to yourself by sending today for your free trial sheet.

BRUNING

America's Largest Supplier of Engineering and Drafting Equipment

CHARLES BRUNING COMPANY, INC., 4700 MONTROSE AVE., CHICAGO 41, ILL.

In Canada: Charles Bruning Company (Canada) Ltd., 105 Church St., Toronto 1, Ont.

Charles Bruning Company, Inc., Dept. 74-M
4700 Montrose Ave., Chicago 41, Illinois

Please send me my 8½ x 11-inch trial sheet of

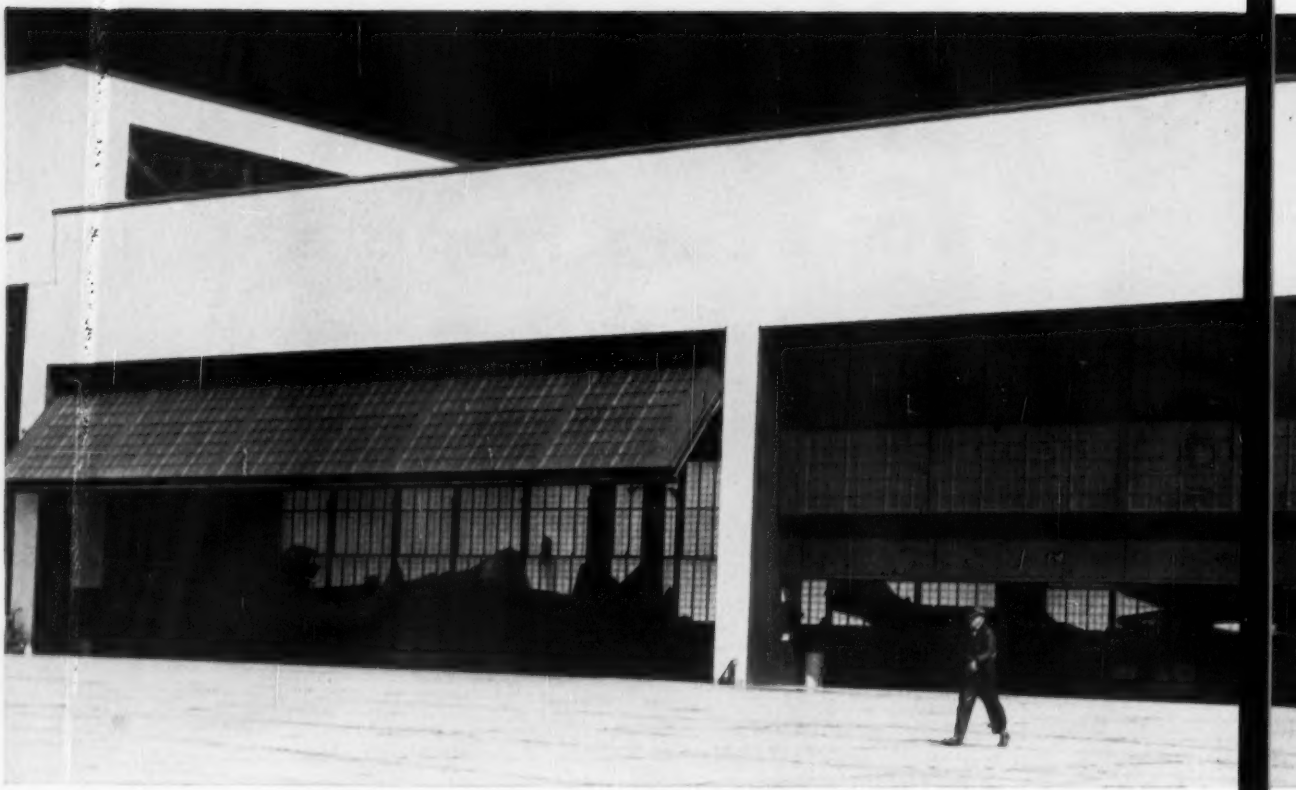
☐ No. 357 "Kovel" ☐ No. 354 "Frenchvel"
☐ No. 350 "Vellux"

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



TRUSCON Vertical Lift Canopy Doors pass all tests for flight test hangar

Quick opening and closing . . . space-saving . . . weather protection . . . resistance to wind load . . . long, dependable operation . . . these are features you demand in hangar doors. Truscon® Steel Doors meet all demands, pass every test.

Vertical Lift Types like these are the most exacting of all big doors. They must be beautifully balanced, skillfully engineered, precisely fitted, imaginatively designed, carefully fabricated and properly installed. In short, they must be the product of big door experience.

Truscon offers you the benefit of just such experience. Thirty years of it. Building and installing the biggest doors of all types.

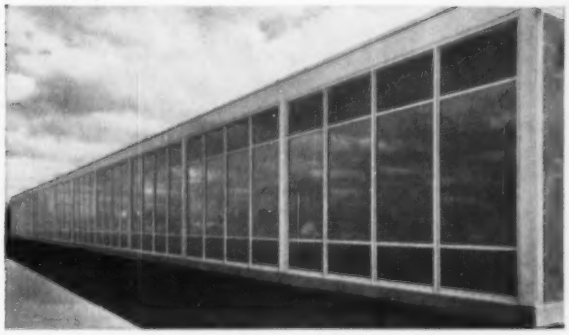
Talk to Truscon—the big name in big doors—about your next hangar job. Truscon builds a variety of proven types fitted to all airport service and climate conditions. Designs include Straight Slide Doors, Tail Doors, Braced and Unbraced Canopy Doors, Vertical Lift Canopy Doors. Truscon door engineers and field crews will help you best apply the proper design and type to your specific needs. Send coupon for catalog to aid in your preliminary planning.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

Flight Test Hangar, McDonnell Aircraft Corp.
Lambert Field, Robertson, Mo.
Sverdrup-Parcel, Inc., architects.
G. L. Tarlton Contracting Co., contractors.

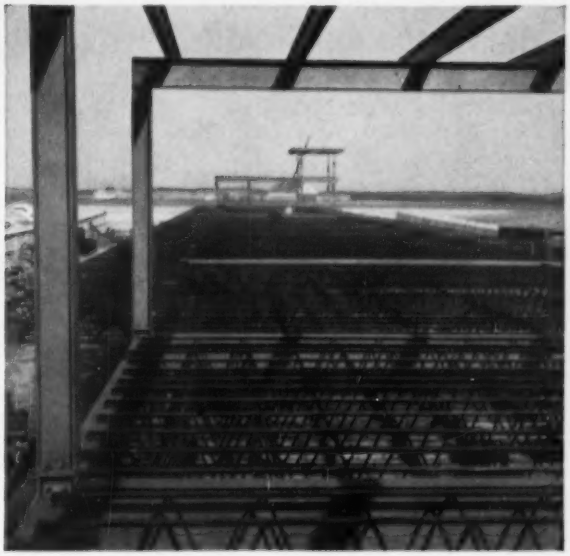


VISION-VENT® IS A WALL WITH A WINDOW. It's Truscon's wall panel that incorporates all the mass-production and installation economies of standard steel windows. Each unit is complete, ready for immediate erection. Designed to enclose entire wall surfaces, Vision-Vent is ideal for airport administration and service buildings. Send coupon for bulletin.

STEEL

and Steel Products

WEDGE-LOCK STEEL SHELVING keeps flagship parts "On Deck" for American Airlines. (Wood inserts are used here to absorb oil and grease.) The heavier the load, the tighter the joint. That's Wedge-Lock Steel Shelving, manufactured by Republic's Berger Division. Shelves and bins are clear and open. Its great strength supports heaviest loads without sagging . . . resists overloading damage . . . permits space-saving high stacking. Investigate WEDGE-LOCK—no stronger shelving is made. Send coupon.



AVIATION'S NEWEST SHOWPLACE built with Truscon "O-T"® Steel Joists. This is the West Concourse of Hopkins Airport, Cleveland, Ohio, with "O-T" Joists placed in position. Truscon Steel Joist floor and roof construction is strong, lightweight, fire-resistant. Erection is fast. A new Truscon Clerespan® Steel Joist provides an unobstructed span up to 96 feet wide. Ideal for hangars. Send coupon.

REPUBLIC STEEL CORPORATION
Dept. C-2151
3114 East 45th Street, Cleveland 27, Ohio

Without obligation, please send further details on:

☐ Truscon Hangar Doors ☐ Vision-Vent Window Walls
☐ Wedge-Lock Steel Shelving ☐ Truscon Steel Joists

Name_____ Title_____

Firm_____

Address_____

City_____ Zone_____ State_____

Sam Braen confers with his Truck Superintendent, Fred Aldrich (seated in truck No. 80, foreground) and Bill Wilson, Asst. Truck Supt. (extreme right), at his Hawthorne, N. J. plant. The picture features some of Braen's new GMC W630 tandems with transit-mix bodies.

"I've been buying GMC's since 1926 because they cost me less to use!"

—says Sam Braen of Sam Braen Industries,

top New Jersey contractor with 132 GMC trucks on the road

EVER SINCE Sam Braen bought his first GMC—the same year he organized his firm—he's been coming back for more. Today, there are 132 of them in all—75 of them 59,000 GVW tandems equipped with 5½-yard concrete barrels.

They put in about 20,000 miles a year. That's modest—until you discover that a big percentage is rugged off-the-road work. And most of the highway travel is through heavy suburban traffic.

Yet this punishing daily diet goes easy on Braen trucks. Road failures are almost nonexistent. Down-times are few—and far between. And a truck goes in for overhaul only after *two years* of hard service. Naturally, maintenance costs are way down.

So are fuel costs—in spite of all the traffic and traffic lights. In fact, Braen GMC's average *a mile a gallon better* than comparable trucks doing the same job!

Obviously, Sam Braen's preference for GMC's is strictly a dollars-and-cents proposition. And it's based on 30 consecutive years of experience.

If you'd like to know more about profitable performers like these—for any kind of truck-work up to 59,000 GVW—see your GMC dealer!

GMC TRUCK & COACH—*A General Motors Division*

Caracas Water Lifted 3,120 Ft

48-INCH PIPELINE up rugged range will carry 68 mgd through 3,464-ft head. Four identical pump stations are spaced along 17.3-mi length.

Caracas, Venezuela, has the dubious distinction of being served by one of the world's most expensive pieces of highway—the $6-million-a-mile road from La Guaria that runs up a 3,000-ft mountain. Soon the city will be in the unenviable position of paying for what will most probably be the world's most expensive water.

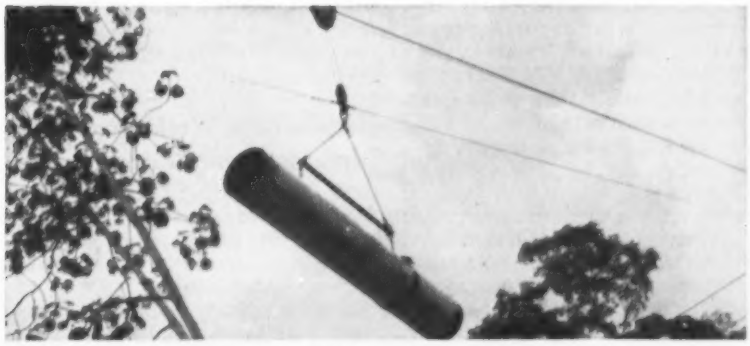
This time, 3,120 ft has to be climbed—by a 48-in. pipeline that will, in August, begin carrying 68 mgd to the city from a stream 17.3 mi away.

Initial cost will be relatively modest, at least for oil-rich Caracas: $42.6 million will pay for the pipeline plus a small dam on the source stream, sedimentation tanks at the source, four big pumping stations, 118 mgd worth of filtration plant and 50 mi of small distribution main.

The big expense will be entailed in operating the pumping stations along the pipeline. Four identical installations are each being equipped with four centrifugal pumps, each requiring 3,800-hp electric motors to move 14,300 gpm through an 866-ft head.

Yearly electrical consumption will run well over 200,000,000 kwh. Thus, energy costs alone, figured at 1¢ per kwh, will be more than $30,000 per mgd to move the water against a total head of 3,464 ft.

Caracas' new water source is the Tuy River, where flows average 850 cfs. A small dam, 8 ft high and 144 ft long, diverts 106 cfs, the equivalent of 68 mgd. Because the Tuy carries a heavy load of sand and silt during the rainy season, sedimentation beds have been provided near the dam. Treatment at this point also includes carbonation and pre-chlorination. Another 68 mgd can be handled in the plant.



CABLEWAYS placed 6.1 mi of 26-ft-long sections of steel pipe.

• **Steep but straight**—Route of the pipeline is only 6% longer than a straight line from the Tuy River intake to a terminal reservoir near Caracas. It was first located using photogrammetric methods and a resultant map on 1:25,000 scale. Ten trial routes were laid out and each was studied with differing arrangements of pumping stations.

Four identical pumping stations were spaced so each will work against the same 866-ft head in lifting the water a total of 3,120 ft over the 17.3-mi route. Power for the four 3,800-hp pumps at each station is supplied by a 115-kv transmission line roughly paralleling the pipeline. A high frequency (240 kilocycles) signal system will control the stations auto-

matically. Electrical power will be generated at a diesel plant located at the filtered water reservoir, whence it will draw cooling water.

Three storage structures are built along the line, one each at the last three pump intakes. An 800,000-gal tank at the second station intake will compensate for a possible 6-min time lag over the first leg, a distance of 9 mi. Cylindrical towers will provide storage at the third and fourth lift stations. These are 19 ft in dia and 56 and 46 ft high respectively.

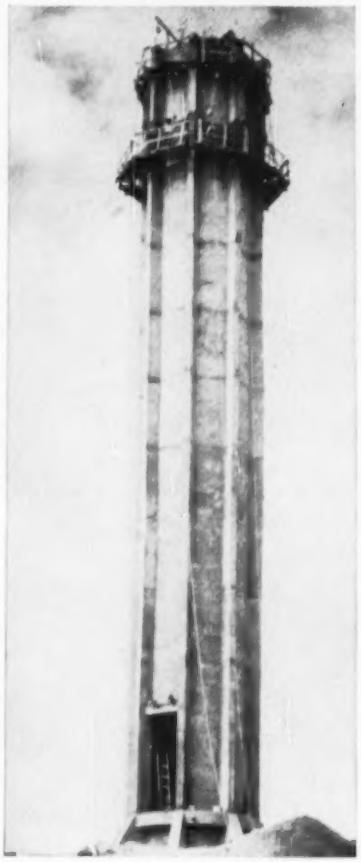
Means for regulating pressure in the pipeline are being built at the highest points of pipeline section. Interesting open-top surge towers have been built in the first and fourth sections. They consist of an interior column of steel pipe the same diameter of the 48-in. main line encased in a concrete shell varying in thickness from 10 in. at the base to 6 in. at the top. Exterior flanges of reinforced concrete buttress the structure. The towers are 148 and 98 ft high.

Equilibrium conditions are maintained in the second section by a length of pipeline running up a steep hillside. A 655-ft tunnel serves for pressure regulation in the third section. It was cheaper to drive the tunnel 194 ft below the summit of a ridge than to run pipe to the crest and build a tower there. The tunnel is 6¼ ft in dia on a 0.002 gradient.

• **Steel line**—The pipeline is of steel, chosen because the metal sections are lighter and easier to handle on the steep slopes encountered. Sections 26 ft long were fabricated in thicknesses ranging from ⅜ to 1 in. to withstand internal pressures up to 750 psi. The metal is protected by a bituminastic coating wrapped in glass fiber. Dresser couplings were chosen for connection.

Pipelaying was accomplished by cableway and side-boom derricks. The former method was employed over 6.1 mi, with one cableway span reaching 2,500 ft. In the operation, a traveling block moves on a supporting cable strung between towers. A second cable runs through the traveling block and a pulley and controls vertical movement of the pipe as it winds and unwinds from a double-action winch. Horizontal movement is controlled by a third cable attached to the pulley. The heaviest pipe sections weighed eight tons.

A total of 128 bridges were built to carry the pipeline across ravines. The largest bridge is 394 ft long. Concrete bents as high as 82 ft support the pipeline.



SURGE TOWERS at high points of pipeline consist of steel column encased in thin concrete shell which is buttressed by concrete flanges.

The 17.3-mi pipeline ties into a mile-long tunnel, 6¼ ft in dia and on a 0.002 gradient. Taking the water over the top of the mountain at this point, 380 ft higher than the mouth of the tunnel, would have required another pumping station and an additional $3.5 million.

Water emerging from the tunnel will empty into a river and flow 4 mi to the Mariposa Reservoir, 7 mi south of Caracas, where treatment facilities are located. When the system begins operation in several months, water will journey from El 417 (feet) at the Tuy River to El 3,214 at Mariposa, reaching a maximum height of 3,562 ft in the surge tower on the last pipeline section.

Before the new system can be started up, the engineers must solve a cart-before-the-horse situation. Level of Mariposa Reservoir is now much below the generator cooling water pump intakes. The only way to fill the reservoir is with Tuy River water. But the pipeline pumps cannot be operated without power, which cannot be generated without cooling water.

Included in the $42.6-million project is a 72-in. concrete pipeline from Mariposa Reservoir to Caracas in which water will flow by gravity. Caracas' complex distribution system, divided into seven zones, will be improved with 50 mi of additional main, six new concrete storage tanks and a steel standpipe. Augmentation by 68 mgd of Caracas' existing 47-mgd water supply comes none too soon for the city's 1,000,000 people.

The work is being prosecuted by the Venezuela's National Institute of Sanitary Works, under the direction of Mathias Brewer, president, and Jesus G. Pieretti, chief engineer.

General contractor for the project is Construcciones Ultramar, S. A., a joint venture of four German and Swiss companies. Wannoni & Lacayo, C. A. of Caracas is laying the pipeline. The pipe was made by Mannesmann of Germany.

France and Germany Agree On Moselle Canal Project

A $130-million construction job was the deciding factor in bringing about the politically significant agreement recently between France and Germany whereby the coal-rich Saar region is to be transferred back to German control. The job is the canalization of the Moselle River, and, as described in ENR April 5, p. 65, it will benefit France greatly in its trade of Lorraine iron ore for Ruhr coal.

Under the agreement, Germany will pay about three-fifths of the cost, France two-fifths. All the French contribution will go toward canalizing some 200 miles of the river, while 40% of the German funds will be used for canalization and 60% for nine hydro plants to be established on the river for the production annually of some 700,000,000 kw hr of energy, all of which will go to Germany. The Germans will build the hydro installations alone, but will join with the French in a joint company to carry out the construction for river navigation.

Norway Gets World Bank Loan for Power Project

The World Bank has approved a $25-million loan to Norway for hydroelectric power development. The loan will help to finance the Tokke power project which will add 400,000 kw of generating capacity to the power network that serves southeastern Norway, including the city of Oslo.

A crew averaging 17 men, using a minimum of special equipment, moved the pipe sections into position from the car to the concrete pier saddles.

The 30-ft pipe lengths were transported to the site from a railhead at Carhuamayo by truck-trailer over a 60-mile tortuous mountain road to a point near the surge tank. From there, pipe sections were lowered downhill, into position by means of an inclined railway running parallel to the course of the penstock.

Steel Penstock Harnesses Paucartambo River for Peru's Latest Hydroelectric Power Plant

In Peru, as in all the other rapidly growing countries of South America, electric power is one of the vital keys to progress. Projects like the harnessing of Peru's Paucartambo River by the Cerro de Pasco Corp. are opening the door to industrial expansion and higher standards of living.

Lifeline of this modern power station is a 4,600-ft penstock in diameters from 74" to 80", made possible by the use of steel pipe and Dresser Couplings. Total vertical drop from a high-level supply tunnel to the power station below is 1,550 ft.

The pipe wall thickness ranges from 7/16" at the top to 1 13/16" at the bottom where the line gives bottle-tight service under a 1,730-ft static head.

Dresser Penstock Couplings made it possible to eliminate expansion joints and follow the terrain with a minimum of grading. Since the penstock is located in an earthquake area, the resilience of Dresser gaskets gives extra insurance against damage by earthquake shock.

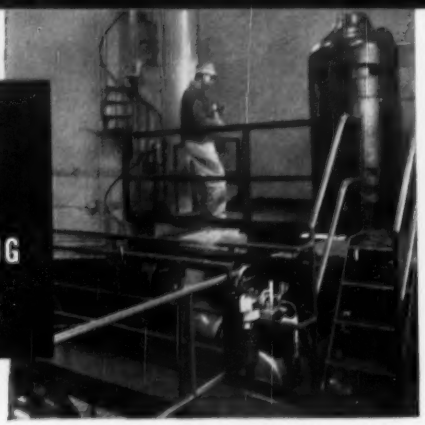
With the pipe in place in the saddles, wrenches were the only tools needed to seal the Dresser Couplings, forming dependable, permanently tight joints.

The fast, easy installation through the use of Dresser Couplings permitted completion well within the allotted time schedule and estimated cost.

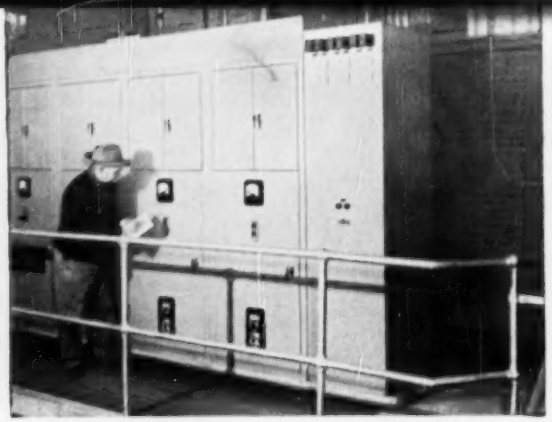
For useful engineering data on other successful Dresser-Coupled steel penstock installations, send for new illustrated penstock brochure. Write: Dresser Manufacturing Division, Bradford, Pa. Sales offices in: New York, Philadelphia, S. San Francisco, Chicago, Houston, Denver, Toronto and Calgary.

ONE OF THE DRESSER INDUSTRIES

ENGINEERING REPORTS:



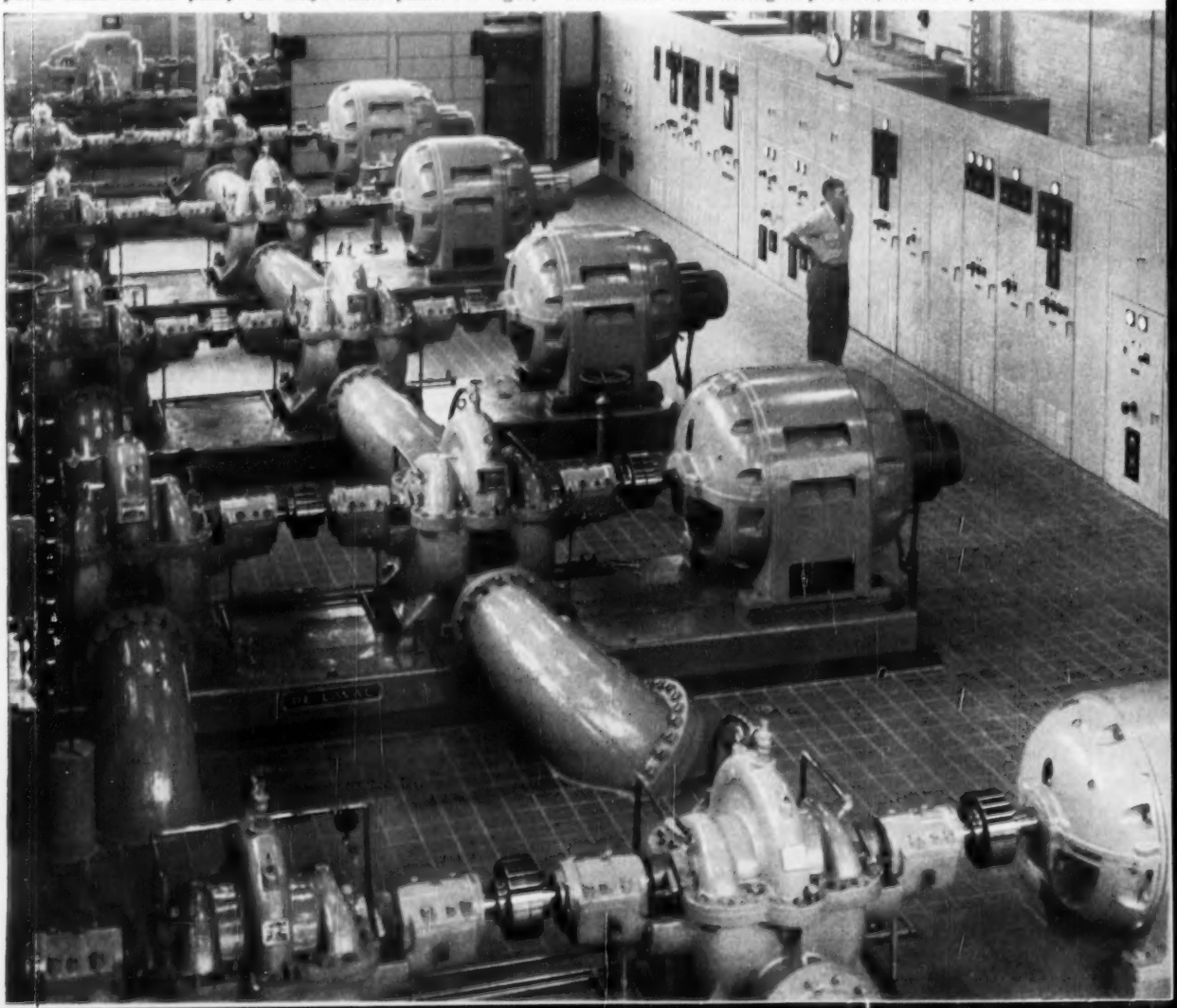
CHATTANOOGA WATER CO.—One of G-E pump drives at Citico Station is sturdy 400-hp Tri-Clad* vertical pump motor. Easy-to-get-at bearings simplify motor maintenance.



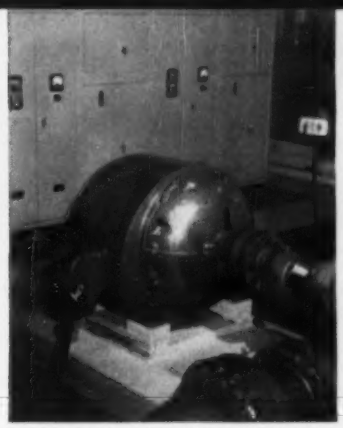
JOPLIN WATER WORKS CO.—Shoal Creek Station uses highly-reliable Limitamp* control for high-voltage motors. Units are custom engineered from standard design to meet application needs of customer.

General Electric helps AWWS design, equip

SO. PITTSBURGH WATER CO.—G-E synchronous motors power main service pumps at Hays Mine plant. At right, Limitamp control provides co-ordinated control of motors while metal-clad switchgear protects, switches power circuits.



LEXINGTON (KY.) WATER CO.—Tri-Clad 500-hp synchronous motor dependably powers key pump. Tri-Clad design protects against physical damage, electrical breakdown, operating wear.



E. ST. LOUIS & INTERURBAN WATER CO.—Tri-Clad motor and factory-engineered control typify General Electric co-ordinated drive system.

MONMOUTH (N.J.) CONSOLIDATED WATER CO.—Sturdy Tri-Clad induction motors also serve main pumps here. Units require little maintenance.

far-flung waterworks to cut operating costs

25 years of successful service to American Water Works Service Co. demonstrate high quality of General Electric engineering, equipment

The American Water Works Service Co., Philadelphia, is responsible for system design and equipment selection for its scores of privately-owned affiliated water companies serving cities throughout the country. It helps assure efficient, low-cost operation at these plants through use of up-to-date equipment and engineering practices.

FOR 25 YEARS General Electric has been privileged to supply equipment and engineering assistance for many of these installations. G-E application engineers have worked closely with AWWS engineers to help select and co-ordinate modern apparatus to cut cost and help assure reliability of operation. G-E field service engineers have helped speed installation of these systems, cutting start-up time to a minimum.

This long record of satisfactory co-operation with AWWS, engineering unit of the country's largest group of private waterworks, gives strong testimony to the value and quality of G-E systems and services.

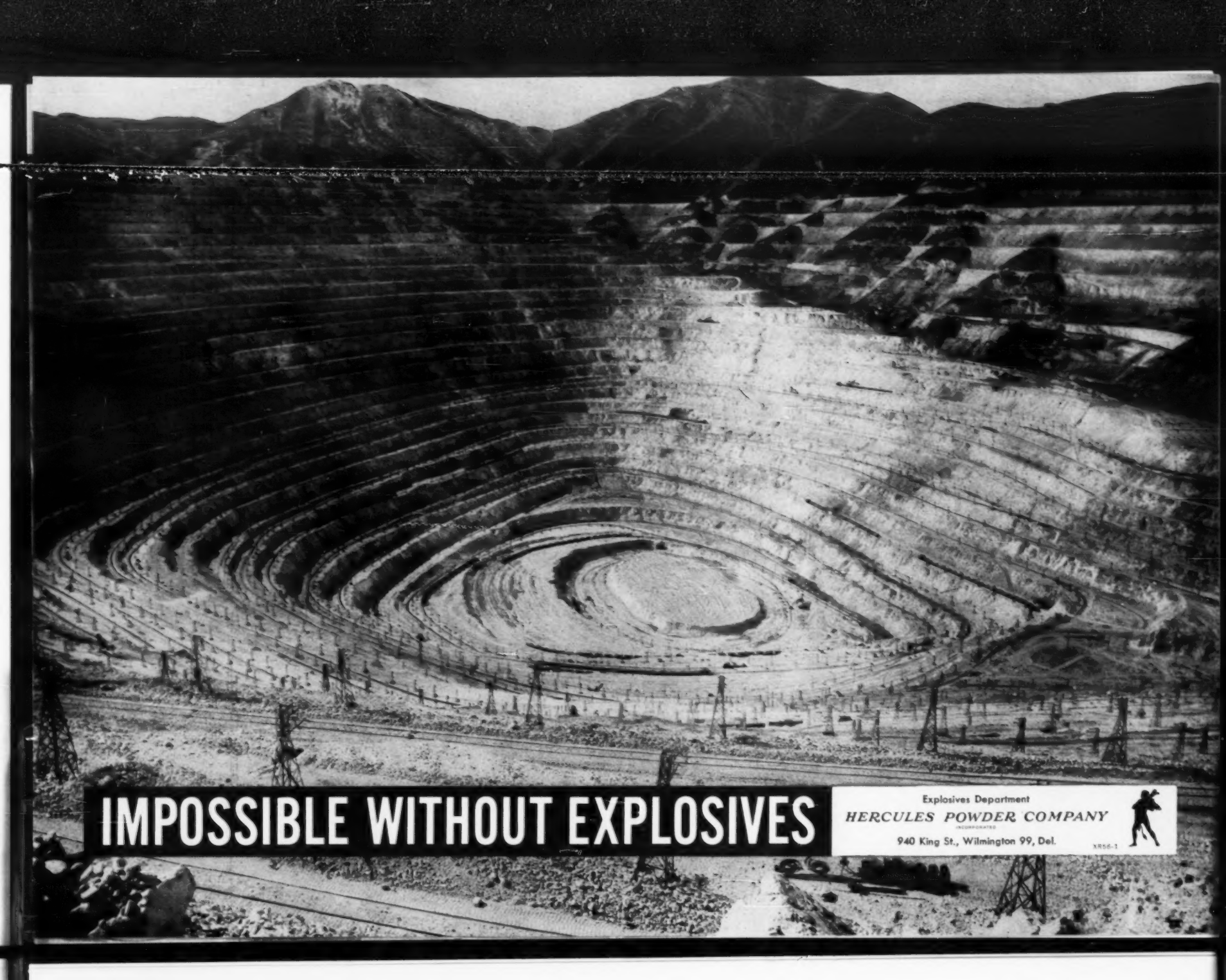
WHATEVER YOUR ELECTRIFICATION PROBLEM, G-E engineering services can help you save time and cost with system-engineered G-E equipment. Contact your nearest G-E Apparatus Sales Office—early in your planning. General Electric Co., Schenectady 5, N. Y. 664-41

Engineered Electrical Systems for Waterworks

GENERAL ELECTRIC

AWWS AND G-E ENGINEERS work out a typical waterworks power distribution problem. From left, Guy Waldrop, Chief Mechanical Engineer, AWWS; A. S. Doxsey, project engineer, AWWS; T. L. Harris, G. F. Fischer and F. M. Jones, General Electric engineers; and D. F. Bixler, project engineer, AWWS.

®Registered Trade-mark of General Electric Company


IMPOSSIBLE WITHOUT EXPLOSIVES
Explosives Department
HERCULES POWDER COMPANY
INCORPORATED
940 King St., Wilmington 99, Del.
XR56-1

Men and Jobs

Wire Reinforcement Institute Appoints Two Top Officers

The Wire Reinforcement Institute has named Ivy H. Smith, Jacksonville, Fla., as president, and M. E. Capouch, Cleveland, as vice president.

Smith, a past president of the American Concrete Pipe Association, is president and founder of Ivy H. Smith Co., manufacturers of reinforced concrete pipe and reinforcing fabric. Capouch, a former president of the Institute, is manager of construction material sales for the American Steel and Wire Division of U. S. Steel.

Engineer Gets High Post On Norfolk-Southern RR

M. C. Jennette, who returned to the Norfolk Southern Railway Co. early this year after a tour of engineering construction work at Raleigh, has been made vice president in charge of operations of the railroad.

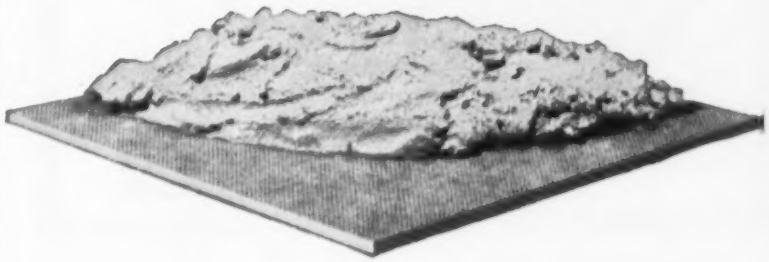
A graduate of North Carolina State College, he held various engineering posts with the Seaboard Airline Railway before joining Norfolk Southern in 1946. After serving as a special representative in the office of the president and as engineer of maintenance of way, he was appointed chief engineer October 1, 1947.

Capt. Jule C. Tate Named To Eighth Naval District

Capt. Jule C. Tate, CEC, USN, has relieved Capt. W. T. Eckberg, CEC, USN, as district civil engineer and district public works officer for the Eighth Naval District. This district

Capt. J. C. Tate

2 sides to use...
3 ways to save!



—and you can pour against Masonite Concrete Form Presdwood again and again! No matter which side of these strong, grainless panels you use... no matter how you plan to finish the surface of your cast...you'll get better architectural concrete when you build your forms of Masonite Concrete Form Presdwood®.

These durable panels are structurally uniform, without knots or grain. Yet it cuts and even bends readily using ordinary carpenter's tools. Large 4′ x 8′ and 4′ x 12′ panels create fewer fins. Send the coupon for a free sample.

For painted surfaces

Pour against the screen side. The textured surface left in the concrete forms an excellent bond for paint. Only minimum rubbing required.

For unpainted surfaces

Pour against the screen side. The tiny projections left in the concrete help to form a better "soap"—cut rubbing costs as much as 50%.

For painted or unpainted surfaces

Hand rubbing is virtually eliminated when you pour against the smooth surface of Presdwood...no knots, grain, or blemishes.

MASONITE
PRESDWOOD PRODUCTS

MASONITE® CORPORATION
Dept. ENR-712, Box 777, Chicago 90, Ill.

Please send me a booklet and a free sample of Concrete Form Presdwood.

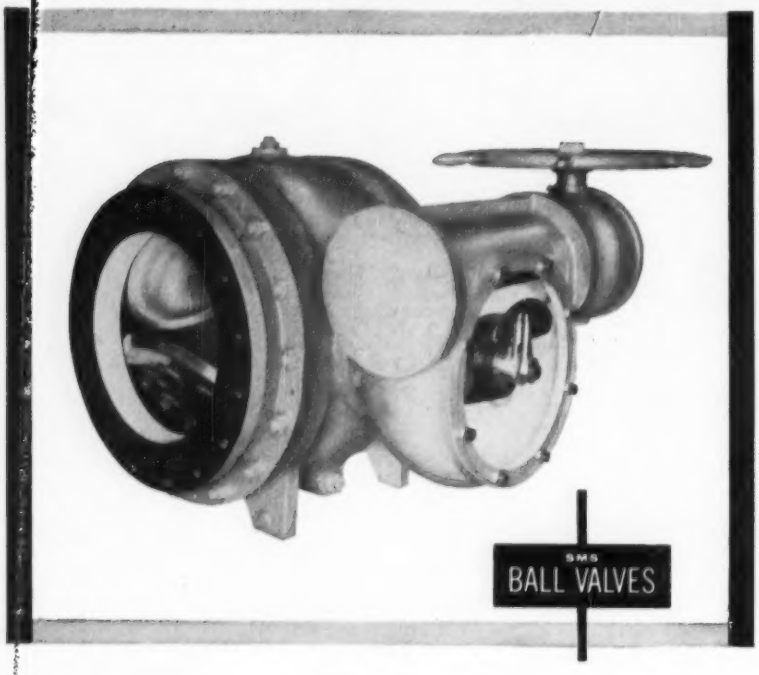
Name.....

Firm.....

Address.....

City.....*State*.....

Zone.....*County*.....



FLOW ITSELF HELPS MAKE SMS BALL VALVES EASY TO CLOSE

Flow velocity actually assists the closing operation of SMS Ball Valves. With the hydraulic action boosted by the powerful leverage of the simple link and lever mechanism (visible through the lucite cover of the demonstration model above), the valve is remarkably easy to close. The wedging action of the metal-to-metal seats assures drop-tight closure.

In the open position, the valve is like a straight length of pipe. Pressure drop and turbulence are kept to a minimum, resulting in lower pumping costs and longer valve life.

The high quality and performance characteristics of SMS valves are guaranteed by over 75 years of research and engineering. For detailed information about our complete line of Ball Valves, Rotovalves and Butterfly Valves, see your local representative, or write to the S. Morgan Smith Company, York, Pennsylvania.

HYDRAULIC TURBINES
PUMPS
GATES & HOISTS
TRASH RAKES
ACCESSORIES
HYDRODYNAMICS
ROTOVALVES
BALL VALVES
BUTTERFLY VALVES
FREE-DISCHARGE VALVES
CONTROLLABLE-PITCH SHIP PROPELLERS

S. MORGAN SMITH

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED • TORONTO

includes Louisiana, Arkansas, Oklahoma, Texas and New Mexico, with headquarters at New Orleans.

Captain Tate is a graduate of the University of Missouri and the Naval War College. He was an officer in the Civil Engineers Corp Inactive Reserve, and was recalled in 1940.

He has just completed a tour of duty as deputy director of the Pacific Div., Bureau of Yards and Docks.

Kentucky Names Bert Kiser State Highway Commissioner

Bert Kiser, Kentucky's deputy state highway commissioner, has moved up to the post of commissioner. He succeeds Robert Humphreys, who has been appointed by Gov. A. B. Chandler to serve as U. S. Senator until the November election.

Kiser was in charge of the Standard Oil of Kentucky bulk plant at Olive Hill for 15 years before being appointed deputy commissioner last December.

Col. Eugene J. Stann Appointed Nashville District Engineer

Col. Eugene J. Stann assumed command of the Nashville District, Corps of Engineers, on July 10. He is relieving Col. G. M. Dorland, district engineer of the Nashville District for the past four years.

Colonel Stann is a 1937 graduate of the U. S. Military Academy. His World War II experience included assignments as Executive Officer on the Alaska Highway, and as Assistant Corps Engineer, Headquarters III Corps in Europe.

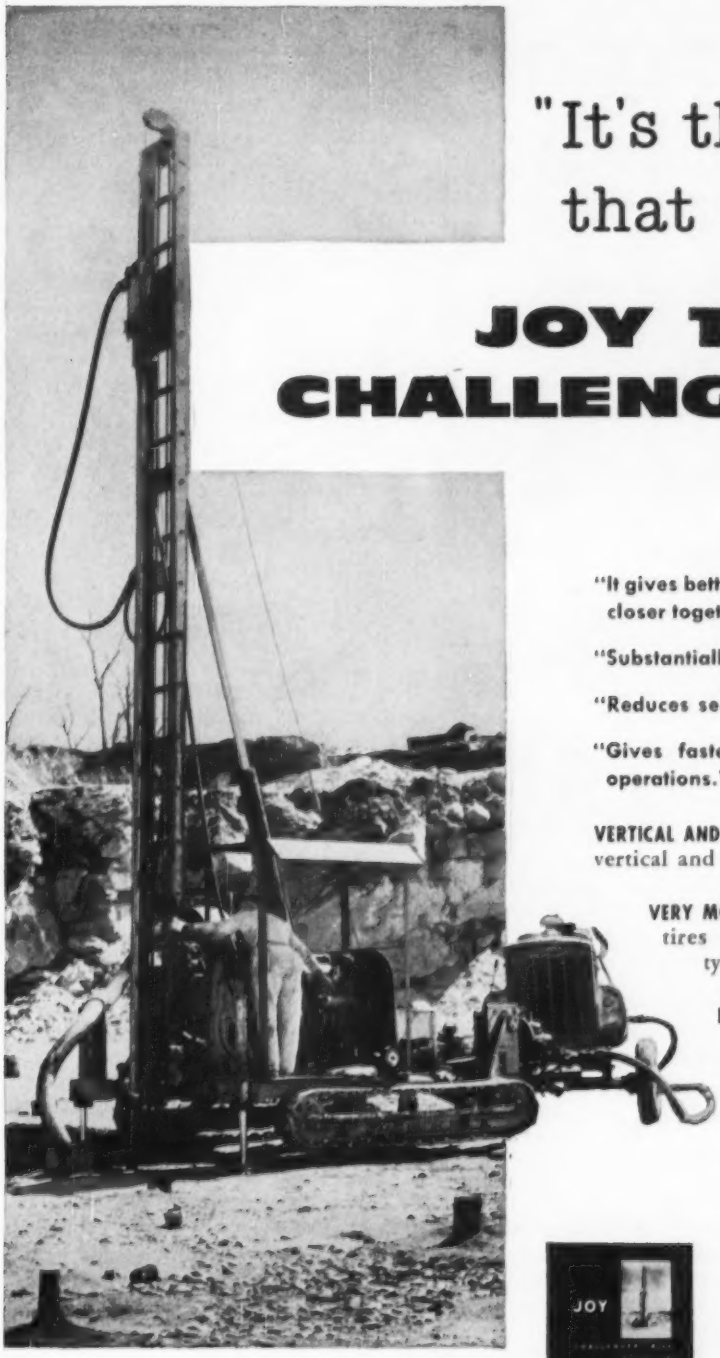
Since the war, Colonel Stann has served as an instructor at West Point; he has earned a Master's degree at MIT; and he has served as Chief, Department of Public Works, in the territory of Trieste. He comes to the Nashville District from the Army War College, Carlisle Barracks, Pa.

California Highway Engineer Retires After Long Service

George F. Hellesoe, maintenance engineer for the California Division of Highways, retired July 6 after nearly 31 years in state service. His successor is Frank E. Baxter, now district engineer at Bishop.

Hellesoe was appointed division maintenance engineer in 1949. A native of California, he began his engineering career in 1910, working in railroad construction before joining the Division of Highways in 1920.

(*Men and Jobs continued on page 70*)



"It's the only drill that does our job:"

JOY TWM-5 CHALLENGER DRILL

H. S. Sugarman, Superintendent
V. DiFrancesco & Sons

"It gives better fragmentation with smaller holes placed closer together."

"Substantially cuts costs over previous methods."

"Reduces secondary drilling to a minimum."

"Gives faster drilling without loss of steel during operations."

VERTICAL AND TOE HOLES . . . Drills at any angle between vertical and 10° above horizontal.

VERY MOBILE . . . Self-propelled on either rubber tires or crawler treads by reversible piston type air motors. Can turn in own length.

REMOTE CONTROL . . . All functions controlled from operator's station at left front.

MASSIVE 5¼" DRILL . . . Drilling is by Joy's TM-500 Hammer Drill mounted on a hydraulically raised and lowered mast.

Write for complete information today to *Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.* In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Write for FREE Bulletin 107-24

Consult a Joy Engineer

for AIR COMPRESSORS • ROCK DRILLS
ROCK BITS • PORTABLE HOISTS • FANS
HYDRAULIC HOSE & COUPLINGS

WSW C 6175-107

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS
FOR OVER HALF A CENTURY

NEW Ramset®
DUO-JOBMASTER

gives you
TWO TOOLS IN ONE!

RAMSET'S new tool has interchangeable barrels, to set either ¼" or ⅜" fasteners into steel or concrete—an added convenience to the time, temper and money-saving advantages of RAMSET FASTENING SYSTEM.

Will do all of your fastening jobs

Operator carries the second barrel in his pocket like a fountain pen, ready to set any variety of fasteners the job may require—light, medium or heavy duty anchoring into hard materials like concrete or steel.

Makes tough jobs easy

No more drilling or chipping; fasteners are set instantly, accurately and permanently with a press of the trigger.

Learn about this low-cost, time-saving, modern way to fasten. Find for yourself what it can mean to any construction job. A demonstration will convince you.

Ramset Fastening System
WINCHESTER-WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION
FIRST IN POWDER-ACTUATED FASTENING

12107 BEREA ROAD • CLEVELAND 11, OHIO

Men and Job Briefs . . .

• **Associations**—The Delaware Society of Professional Engineers elects as president, **James H. Hallett, Jr.**, design project manager in the engineering department of E. I. du Pont de Nemours and Company, Wilmington, Del. . . . **Lewis J. Sforzini,** utilities engineering consultant at the Eastman Kodak Company Park Works, Rochester, N. Y., is named president of the New York State Society of Professional Engineers.

• **Corps of Engineers**—Formerly chief of the mechanical engineering department laboratory, **Robert W. Beal** is appointed director of development at the Corps of Engineers Research and Development Laboratories, Fort Belvoir, Va.

• **Careers**—The National Science Foundation appoints, as program director of engineering sciences, **E. E. Litkenhous,** who is on a leave of absence from Vanderbilt University . . . **Edmund F. Hughes** is named general superintendent of the Sewerage and Water Board of New Orleans. He replaces the late A. Baldwin Wood.

• **Business**—**Russel S. Bodwell,** formerly associated with Porter, Urquhart, McCreary & O'Brien of Newark, N. J., is appointed assistant chief engineer of the Union Building & Construction Corporation, Passaic, N. J. . . . The United States Steel Corp. appoints **Norman B. Obbard** as assistant executive vice president in charge of operations, and **Austin J. Paddock** to succeed him as president of the corporation's American Bridge Division . . . Formerly assistant bridge engineer of the New Hampshire Department of Public Works and Highways, **Robert J. Prowse** joins the staff of D. B. Steinman, consulting engineer . . . Malcolm S. Spelman announces that the consulting engineering firm of Gussow & Skidmore, New York, changes its name to **Spelman, Gussow & Skidmore** . . . The construction firm of George Sheaf & Co., Inc., located in Columbus, Ohio, is sold to a syndicate headed by R. H. Jackson of Denver, Colo. The name of the firm will be changed to the **Eastmount Construction Co.,** with Jackson as president.

• **Retirements**—**Kenneth R. Young,** area engineer for the Vicksburg District, Corps of Engineers, after 40 years of service with the Corps . . . **W. Earl Weller,** director of the Rochester (N. Y.) Bureau of Municipal Research, after many years of engineering service.

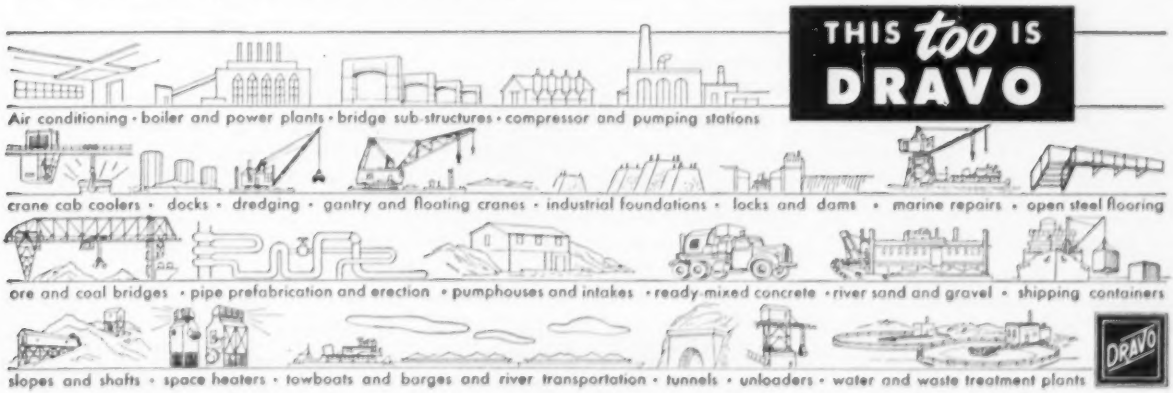
DRAVO'S RIVER FLEET SERVES PITTSBURGH INDUSTRIES

Coal transportation by water in the Pittsburgh district is an old story. As early as 1803 this basic fuel was floated from the rich Monongahela Valley coal deposits to down-stream destinations on crude flat boats.

Today's coal traffic is a vital economic factor in the industrial life of Pittsburgh. As one of its operating phases, the Keystone Division of Dravo Corporation is engaged in a towing service which hauls substantial tonnages of coal from up-stream mines. Deliveries are made on a regular schedule, to riverside docks of industrial plants that take advantage of dependable, low-cost river transportation to move bulk cargoes.

The Keystone Division is also known as the largest producer of sand, gravel and ready-mixed concrete in the Pittsburgh area. Keystone has played a large part in supplying this material to many of the projects in Pittsburgh's tremendous building program.

This is one of many ways in which Dravo has served business and industry in a variety of engineering fields for more than 60 years. Dravo considers customer satisfaction an essential factor in all its products and services. DRAVO CORPORATION, PITTSBURGH, PENNSYLVANIA.


THIS too IS DRAVO
Air conditioning • boiler and power plants • bridge sub-structures • compressor and pumping stations
crane cab coolers • docks • dredging • gantry and floating cranes • industrial foundations • locks and dams • marine repairs • open steel flooring
ore and coal bridges • pipe prefabrication and erection • pumphouses and intakes • ready-mixed concrete • river sand and gravel • shipping containers
slopes and shafts • space heaters • towboats and barges and river transportation • tunnels • unloaders • water and waste treatment plants
DRAVO

No Idle Hours for Tractair on Nebraska Building Project

Plumbing contractor keeps it going nearly 8 hours a day, 5 days a week — logs 158 actual working hours in one month.

There's always another job waiting for this versatile combination 125-cfm air compressor and 42-hp wheel tractor.

On most jobs, large and small, contractors can keep the Le Roi Tractair busy all day long — bringing the cost-cutting advantages of mechanization to many operations.

Both a tractor and an air compressor, the combination unit does five basic jobs on the University of Nebraska building project for Martin-Cochran Co., plumbing contractor.

It powers paving breakers, tampers, and clay spades with its 125-cfm air compressor. A front-end loader attachment is used to backfill, load, and clean-up. After the water lines are installed, the compressor is used to test the lines for leaks.

Tractair carries its own tools and accessories. No trucks are required to tow a compressor or haul hose and tools. All the operator need do is drive the machine to the job site, hook up an air tool, and go to work.

"Handiest piece of equipment on the job," says the plumbing contractor's operator. He works alone with the versatile unit as it goes from job to job, providing power for Le Roi-Cleveland air tools, and tractor power for backfilling, loading, and cleaning up. It can be provided with a variety of drilling attachments, front-end loader, backhoe, rotary sweeper, backfill blade, etc.

Speed is of the essence and the $1,800,000 University project is now under a full head of steam. The plumbing contractor with his Tractair expects to finish extensive water-line and plumbing work on schedule.

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

Obituaries

Homer Russell Seely, 58, whose career had made his name synonymous with some of the most famous U.S. bridges, died June 23 at his home in Woodbury, N. J. At his death, he was resident engineer on construction of the new Walt Whitman suspension bridge across the Delaware River between Philadelphia and New Jersey.

A 1919 graduate of Cornell University, Mr. Seely in 1923 began a long career in public service, beginning as assistant bridge engineer on construction of the Philadelphia-Camden Bridge. He joined the Port of New York Authority in 1925, and served among other posts, as resident engineer on construction of the George Washington Bridge across the Hudson River. From 1932 to 1936, he was resident engineer on construction of the Bronx-Whitestone and Triborough bridges for the Triborough Bridge and Tunnel Authority, and from 1938 to 1948 he served as deputy commissioner of the NYC Department of Public Works.

Leaving public service, Mr. Seely in 1948 joined the consulting firm of Howard, Needles, Tammen & Bergendoff to serve as project engineer on construction of the Delaware Memorial Bridge; then in 1952 joined the firm of Modjeski & Masters-Ammann & Whitney on the Philadelphia structure.

James E. McDonald, 85, former contractor in partnership with the late Eugene Schuler in Oakland, Calif., died May 26. His firm built the Tribune Tower, the Veterans Memorial Building and the Ninth Avenue Pier in San Francisco.

Laurence J. Herr, 57, died in Westfield, N. J., June 12. He had been a civil engineer for the Esso Research and Engineering Co. for the last 27 years. He was a graduate of Lafayette College.

Ross W. Taylor, 57, construction engineer with A. V. Stackhouse Co., died in Indianapolis June 5. A civil engineering graduate of Purdue University, he was construction project manager for the Army Finance Center at Fort Harrison, near Indianapolis.

Edward J. Noonan, 82, Chicago municipal consulting engineer and engineer for construction of a number of railroads in the south and southwest, died June 17, in Chicago. Prior to railroad affiliations, Mr. Noonan was city engineer for La Salle, Ill., for several years.

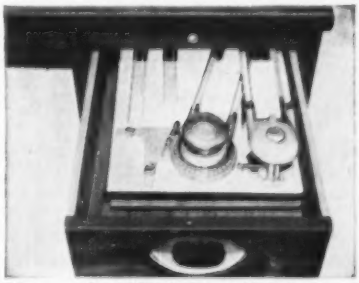
DRAFTING TRENDS

Chief Draftsman W. P. Nickels of Tennessee Gas Transmission Company (Houston, Texas) at work with his portable "Desk Topper"

Portable drafting unit sets up in two minutes

A handy drafting unit with the precision of a full-size drafting machine is now available to engineers who need portable facilities. Called "Desk Topper," the package-size unit can travel along with you or slip away in an office drawer. All essentials are included: drafting machine, set of scales, folding board, storage container for tools, and paper dispenser.

The "Desk Topper" sets up quickly (2 minutes) on any desk or table—at home, in the office, hotel room or studio.



The complete "Desk Topper" hides away quickly in any standard desk drawer or in the sturdy carrying carton. (Handsome luggage case is available at extra cost.)

The unit comes packed in a lightweight carrying carton for easy portability. For engineers who use the board only occasionally, the entire unit fits into any standard desk drawer.

Manufactured by Universal Drafting Machine Corp., "Desk Topper" has the professional features of their large "Boardmaster" machine—360° protractor, automatic 15° indexing, full line base selector, double 10′ vernier and clamp, elbow height adjustment, screw anchor, enclosed band and pulley arms, built-in brakes for 10° board slope.

The smooth linoleum surface board measures 21″ x 23½″ when open, 21″ x 11¾″ when closed. Normal drawing capacity is 17″ x 22″, or 24″ x 36″ when mounted to a larger board. The legs with rubber feet fold up automatically, provide a 10° slope in use.

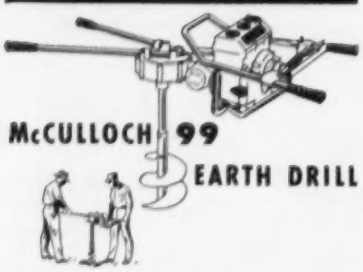
The "Desk Topper" scales are another excellent feature. Self-locking and self-aligning, they eliminate two common causes of drafting machine inaccuracy —loose chucking, and errors in right angle alignment.

Further information on "Desk Topper" is available from the Reader Service Division of the Frederick Post Company, 3668 N. Avondale Avenue, Chicago 18.

POST

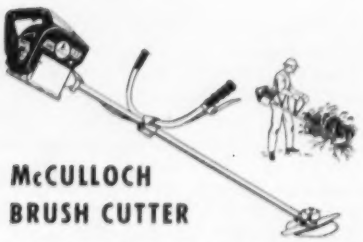
SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

NEW
gasoline-powered tools
for
CONTRACTORS



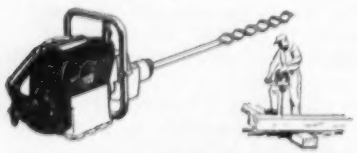
McCULLOCH 99 EARTH DRILL

- Digs post holes quickly at any angle, in any terrain, in any soil
- Drills vertically – bores horizontally
- Digs soil-test samples conveniently
- Opens gate and other gear-driven valves
- Converts into heavy-duty chain saw for cutting timber
- Will reverse direction of rotation
- Available with choice of augers
- Exceptionally powerful and light in weight



McCULLOCH BRUSH CUTTER

High-speed, light-weight tool saves time cutting brush. Easily operated by one man. Converts into one-man chain saw, or drill shown below.



McCULLOCH ALL-PURPOSE DRILL

For stump blasting, linework, bridge work, and other construction; also drills rock and soil and works with Jacobs chuck. Converts into one-man chain saw, or brush cutter shown above.

SEND FOR FREE LITERATURE AND NAME OF NEAREST DEALER

McCULLOCH
McCulloch Motors Corporation
6117 W. Century Blvd.
Los Angeles 45, California

World's largest chain saw builder
Nationwide sales & service

Unit Prices

New Jersey Sewer Will Serve Double Purpose

This combined storm and sanitary intersepting sewer system will serve Elizabeth, N. J. It will be of reinforced concrete pipe and 6,215 lin ft long. The total cost, $1,359,625, is 3% below the engineer's estimate. Grassman & Kreb, Elizabeth, are consulting engineers, Alexander Potter Assoc., New York, associate engineer and Edward Sloboda is project engineer.

Work is divided into two similar sections at different locations. It was let in two contracts. In addition to pipe, manholes and paving one contract includes three storm water regulators, while the other calls for two railroad undercrossings.

Tibbets Cont. Corp., Yonkers, N. Y. was low bidder on the contract involving the regulators. Their $672,650 low bid was 3.3% below the second low bid. This contract award pends.

For $686,975, the other contract went to La Fera Cont., Co., Inc. of Newark, N. J. This is 32.6% below the second bid.

Specifications require ASTM standards C 76-51, Table II, for reinforced concrete culvert pipe.

Wage rates are $4.10 for skilled labor, $2.90 for semi-skilled and $2.25 to $2.75 for common labor.

The bidders include:

Price Street to Trumbull Street

1 Tibbetts Cont. Corp., Yonkers, N. Y.	$672,650
2 La Fera Cont. Co., Inc., Newark, N. J.	695,990
3 Mal-Bros. Cont. Co., Newark, N. J.	1,139,660

Bids: 5-3-56 Items	Unit	Quantity	Unit Prices 1	 2
RCP, extr str, 48", 22-26'	lf	100	$125.00	$137.00
26-30'	lf	10	130.00	178.00
54", 22-26'	lf	2,100	150.00	146.00
26-30'	lf	500	170.00	200.00
30-34'	lf	10	200.00	242.00
MH, type A, on 54" sewer, 22-26' deep	ea	5	3,000	4,200
spec 21" inlet	ea	1	4,000	5,000
26-30' deep	ea	1	4,000	4,500
Excav, additional	cy	200	3.00	20.00
Sand & gravl bkfl, bank or pit run	cy	5,000	3.00	12.00
Timber sheet left in place	Mbm	750	1.00	1.00
Steel sheet left in place	t	200	285.00	285.00
Fndn stone, additional	cy	700	3.00	14.00
Underdrains, compl, 8"	lf	2,800	0.50	2.80
Conc, cl A, additional	cy	50	50.00	40.00
cl B, incl all cradle	cy	950	40.00	30.00
Steel, reinf, additional	lb	8,000	0.30	0.30
Paving, temporary	sy	1,400	4.00	3.00
Storm water regultr No. 1	ls	job	30,000	18,800
No. 2	ls	job	28,000	18,000
No. 3	ls	job	51,000	28,000

Trumbull Street to Humboldt Avenue

1C La Fera Cont. Co., Inc., Newark, N. J.	$666,975
2 Tibbetts Cont., Corp., Yonkers, N. Y.	1,019,270

RCP, extr str, 30", 14-16'	lf	360	$60.00	$140.00
18-22'	lf	380	80.00	150.00
22-26'	lf	10	90.00	160.00
42", 14-16'	lf	400	90.00	130.00
18-22'	lf	1,800	110.00	145.00
22-26'	lf	450	130.00	155.00
26-30'	lf	10	147.00	180.00
48", 18-22'	lf	10	136.00	145.00
22-26'	lf	150	158.00	165.00

Bids: 5-3-56 Items	Unit	Quantity	Unit Prices 1C	 2
RCP, extr str, 48", 26-30'	lf	15	227.00	200.00
MH, type A, 30" sew, 18-22' spec 30" inlet	ea	1	3,700	3,000
42" sew, 18-22' deep	ea	6	4,000	2,500
22-26' deep	ea	2	4,200	3,000
48" sew, 22-26' deep spec 30" spur	ea	1	4,000	1,000
Excav, additional	cy	300	20.00	2.00
Sand & gravl bkfl, bank or pit run	cy	1,500	12.00	3.00
Timber sheet, left in place	Mbm	120	1.00	1.00
Steel sheet, left in place	t	250	285.00	285.00
Fndn stone, additional		800	14.00	3.00
Underdrains, compl, 8"	lf	3,100	2.70	0.50
Conc, cl A, additional	cy	70	40.00	50.00
cl B, incl all cradle	cy	800	30.00	40.00
Steel, reinf, additional	lf	7,000	0.30	0.30
Paving, temporary	sy	900	3.00	4.00
RR undercross, main line	ls	job	80,000	215,000
Newark branch	ls	job	51,000	148,000

Time to complete: 365 calendar days
Liquidated damages: $100 per day

Bridge and Underpass on South Carolina Highways

Two contracts, one for a 190-ft reinforced concrete bridge at $37,789 and the other for a 195-ft underpass at $51,846, for South Carolina State Highway Department both went to Robert E. Lee & Co., Inc., Manning, S. C.

The bridge tops the engineer's estimate by 0.75%, but is 4.2% below the second low bid. It includes five 38-ft reinforced concrete deck girders, interior piers of precast concrete piles and end bents on spread footings. It replaces an obsolete timber and I-beam structure over the Southern Railroad in Aiken County.

The underpass near Williamston in Anderson County is 5.1% below the second low bid.

Class A concrete requires 6¼ bags of cement per cu yd.

The bidders include:

Reinforced Concrete Bridge

1C Robert E. Lee & Co., Inc., Manning, S. C.	$37,789
2 Copeland Const. Co., Orangeburg, S. C.	39,451
6 J. N. Deierlein, Columbia, S. C.	45,344
EE South Carolina State Highway Department	37,500

Bids: 8-15-56 Items	Unit	Quantity	Unit Price 1C
Concrete, cl A, for structures	cy	321.3	$59.00
Steel, reinforcing	lb	19,335	0.12
Piles, conc, precast, oct, 21"	lf	544	13.00
Slope drains, concrete block	lf	200	2.50
Excess embk mat, remov & disp of	ls	job	300.00

Reinforced Concrete and Structural Steel Underpass

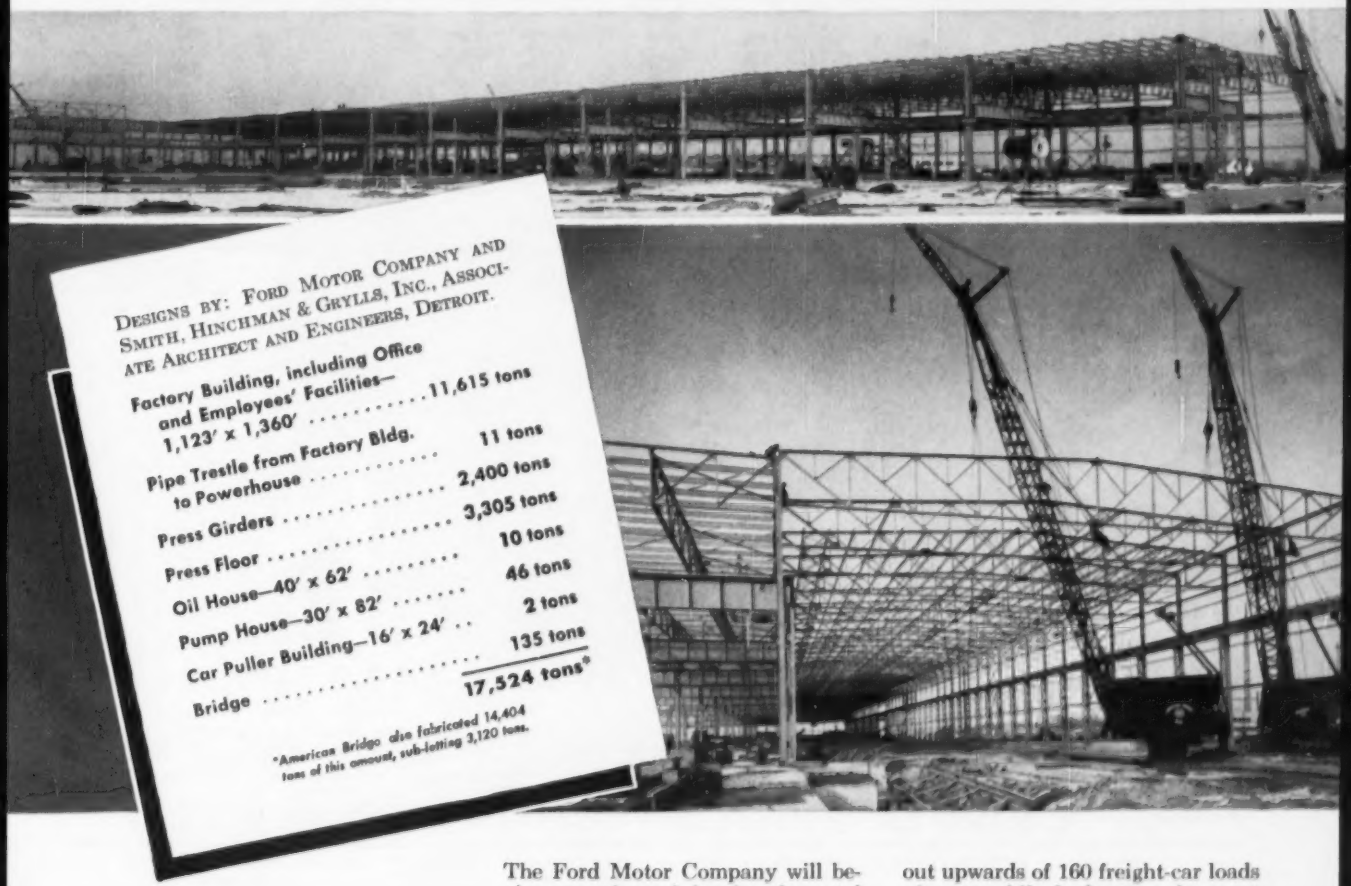
1C Robert E. Lee & Co., Inc., Manning, S. C.	$51,846
2 Ben H. Martin, Easley, S. C.	54,634
7 A. M. Tuck, Inc., Greenwood, S. C.	62,073

Bids: 8-15-56 Items	Unit	Quantity	Unit Price 1C
Excav, wet & dry, for bridges	cy	120	$2.00
Concrete, cl A, for structures	cy	268.7	50.00
Steel, reinforcing	lb	53,011	0.11
superstructures	ls	job	27,000
Handrail, metal, fabricated	lf	390	10.00
Piles, creosoted timber	lf	400	3.00
Slope drains, concrete block	lf	80	3.00

Time to complete: 180 calendar days
Liquidated damages: $20 per day

AMERICAN BRIDGE

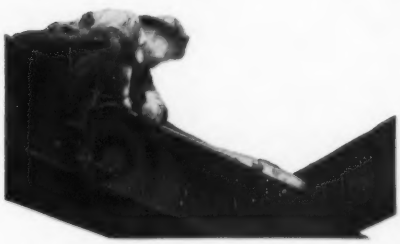
erects 17,524 tons of steelwork in just 4 months for FORD'S NEW METAL STAMPING PLANT



DESIGNS BY: FORD MOTOR COMPANY AND SMITH, HINCHMAN & GRYLLS, INC., ASSOCIATE ARCHITECT AND ENGINEERS, DETROIT.

Factory Building, including Office and Employees' Facilities—1,123′ x 1,360′	11,615 tons
Pipe Trestle from Factory Bldg. to Powerhouse	11 tons
Press Girders	2,400 tons
Press Floor	3,305 tons
Oil House—40′ x 62′	10 tons
Pump House—30′ x 82′	46 tons
Car Puller Building—16′ x 24′	2 tons
Bridge	135 tons
	17,524 tons*

*American Bridge also fabricated 14,404 tons of this amount, sub-letting 3,120 tons.



BOLTED—All field connections on this job were made with high tensile and ordinary bolts.

The Ford Motor Company will begin operation of its fourth metal stamping plant late this summer.

Located near Chicago Heights, about 25 miles from the Loop, the new plant is as modern as you'll find anywhere. The mammoth steel frame main building is 1123′ wide by 1360′ wide and provides 1,700,000 square feet of floor space, for offices, employee facilities, and the factory.

The plant is designed to accommodate 22 major and 21 intermediate lines of giant 50- to 1,000-ton presses. When full production is reached, the plant will employ approximately 4,000 people and turn out upwards of 160 freight-car loads of automobile body stampings per day.

17,524 tons of structural steel went into the vast building. American Bridge fabricated 14,404 tons and erected the entire 17,524 tons. In the panel above is listed the tonnage used in the project. All field connections were made with high tensile and ordinary bolts.

If you would like to know more about the advantages of having American Bridge fabricate and erect the structural steel work for your expanding industrial facilities, just contact our nearest office.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA • GARY HOUSTON • LOS ANGELES • MEMPHIS • MINNEAPOLIS • NEW YORK • ORANGE, TEXAS • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

INTERESTING MOTION PICTURES AVAILABLE—"Building for the Nations" and "The Suspension Bridge," two entertaining and educational films, now available without charge to businesses, fraternal and civic organizations, churches, schools and colleges. Write to Pittsburgh office for bookings.

UNITED STATES STEEL

Materials and Labor Prices — Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- * July 19 — Wood Products, Glass, Explosives, Chemicals
- * July 26 — Clay Products, Lime, Plaster, Paint, Roofing
- *Aug. 2 — Wage Rates, Building Board, Lath, Insulation
- *Aug. 9 — Cement, Aggregate, Ready-mixed Concrete, Asphalt

IRON AND STEEL PRODUCTS — PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$4.60	$4.50	$4.65	$5.25	.....	$94.50	$113.00	$5.825	$7.90	$5.625	.....
Chicago Area	4.60	4.50	4.65	9.25	$5.45	94.50	113.00	5.825	7.90	5.625	.....
Pittsburgh Area	4.60	4.50	4.65	9.25	5.45	94.50	113.00	5.825	7.90	5.625	$11.50
Buffalo Area	4.60	4.50	4.65	9.25	5.45	94.50	113.00	5.825	7.90	5.625	11.50
Cleveland	.....	.....	4.65	9.25	5.45	.....	.....	.....	.....	.....	11.50
Youngstown Area	.....	.....	4.65	.....	.....	.....	.....	.....	7.90	.....	.....
Geneva	4.60	4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	.....	.....	.....	.....	5.45	.....	.....	.....	7.90	.....	.....
Pueblo	4.90	5.35	5.10	.....	.....	.....	95.00	5.825	7.90	5.625	12.40

IRON AND STEEL PRODUCTS — F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$8.44	.....	$8.85r	$49.50	$50.00	
Baltimore	8.05	7.52j		39.00	43.50	
Birmingham	7.28t	7.12t	7.12t	61.00p	67.00p	
Boston	8.27a	7.82	7.82	44.00	48.50	4 × 16 in., No. 8 & 10 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $3.40
Chicago	7.43	6.22gu	6.22gu	49.00‡	60.00‡	
Cincinnati	7.90uk	7.50rs	.....	41.00mn	45.50mn	4 × 12 in., No. 8 & 12 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $3.22
Cleveland	7.78	6.41c	.....	41.00‡	45.50‡	
Dallas	9.05	7.40	7.40	49.00	52.00	
Denver	8.95	8.00c	.....	54.00n	60.00n	6 × 6 in., No. 6 & 6 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $3.67
Detroit	7.90	7.38	.....	56.00	58.00	
Kansas City	7.95a	7.75	.....	49.00	60.00	
Los Angeles	8.30fd	7.75	.....	†54.50	60.50	
Minneapolis	7.83d	8.14b	8.14b	42.50	47.00	
Montreal	7.70–8.15nC/7.75–8.15A	7.50/8.95x	7.50/8.95	65.70A	70.20A	
New Orleans	.....	7.05aks	.....	44.50	49.50	
New York	8.21	7.35y**	7.35y**	44.50ma	51.00ma	
Philadelphia	8.04	7.14	.....	42.50‡	47.00‡	
Pittsburgh	7.43	6.57**	.....	42.50	47.00	
St. Louis	7.83e	7.35c	7.35c	57.00f	59.00f	
San Francisco	8.55	7.55j	.....	47.50	53.00	
Seattle	8.50†	7.70e	.....	55.00nr	61.00nr	
Toronto	8.40*	7.25	7.25	56.00nq	70.00nc	

Quantity extras, per cwt: under 100t, +$2; 100–399t, +$1.50; 400–999t, +$1.00; 1000–1999t, +50¢; 2000–4999t, base price; 5000–9999t, —10¢; 10,000–19,999t, —75¢; 20,000–29,999t, —90¢; 30,000 and up, —75¢

EXTRAS, per cwt—*Quantity: less than 700t, +50¢; 700–1499t, +25¢; 1500–2999t, +10¢. *Size†: #2 +$2.20; #3, #4, #5 +$1.10; #4 +40¢; #5 +62.5¢; #6, #7 +45¢; #8, #9, #10, #11 +35¢. *Bending: heavy, +50¢; light, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job). *Engineering: details and placing from designs by others): over 500 tons, +45¢; 200–500 tons, +50¢ but not over $4500; 20–200 tons, +60¢ but not over $2000; 5–20 tons, +70¢ but not over $240; under 5 tons, +85¢ but not over $70. *Design only: +60¢.

*‡ Delivered *a 2000–9999t *b 10,000–19,999t, fob city *c 20 tons or over *d 10,000–19,999t *e Intermediate struct'l *f Incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more. *q 3 lb *r 2% off for cash *s 2,000–4,999t *t add 15¢ del. *u add 6.25¢ switch *v incl 15¢ del. *w 3.5 lb *x add 5¢ switch *y add 30¢ del. *z add 10¢ del. *A American made. *C Canadian made. † Previous prices for struct'l was fob mill. Previous prices for bars was intermediate & hard grade *r Aver. of Canadian & American. ** 4 tons

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXx	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE 12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	117.6	$1.56	$2.60	$.55	$1.30	$4.95	$12.25	$225.00	.....	$0.88m	$3.25m
Baltimore	127.1	1.56	2.60	.655	1.28	5.08e	12.71	187.80	$289.20	1.01	2.75m
Birmingham	113.1	1.56	2.60	.44	.81	3.55w	10.37w	260.00‡	440.00‡	1.90m	4.00
Boston	129.8	1.58	2.39	.788qrt	1.502qrt	6.211qrt	.....	203.40r	312.60r	1.54mg	3.65mg
Chicago	127.5	1.56	2.39	.93m	1.78m	7.52m	21.16m	150.00‡	270.00‡	1.00	3.65
Cincinnati	122.3	1.58	2.47	.665t	1.282St	4.906t	13.505t	240.00	370.00	.85m	3.25m
Cleveland	128.3	1.58	2.47	.567s	1.0935s	4.545t	11.787t	149.40m	231.60m	.85m	3.25m
Dallas	124.6	1.58	2.73	.439	.799	4.00b	9.17b	.....	.....	.63	1.86
Denver	134.2	1.66	2.73	.47n	.84n	3.73n	.....	.....	.....	.74m	2.50m
Detroit	128.6	1.58	2.47	.85	1.65	6.45	17.50	240.00m	370.00m	.95	3.82
Kansas City	125.2	1.58	2.47	.61	1.105	4.54	12.75	250.00	480.00	.90	2.90
Los Angeles	134.8	1.68	2.39	.671	1.46l	5.97l	14.89l	228.20l	348.90l	1.02	3.02f
Minneapolis	136.1	1.61	2.60	.83mo	1.55mo	6.50mo	.....	.....	.....	1.66A	4.47A
Montreal	.....	.....	.....	1.02u	1.80u	6.30u	12.00u	.....	.....	1.17A	3.11j
New Orleans	120.2	1.58	2.60	.81	.925	5.18	.....	350.00p	550.00p	.75	2.50
New York	125.6	1.58	2.39	.94	1.78	6.96	18.14	.....	.....	1.15	3.00
Philadelphia	125.0	1.56	2.39	.85	1.35	4.95e	12.65e	300.00‡	350.00‡	1.60A	3.95A
Pittsburgh	130.4	1.58	2.39	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05A	2.50A
St. Louis	123.7	1.56	2.47	.59	1.06	4.45	10.80	180.00‡	380.00‡	1.30il	2.80il
San Francisco	134.8	1.66	2.39	.74d	1.62d	6.80d	16.47d	235.00‡	392.00‡	1.05m	3.30m
Seattle	135.4	1.66	2.39	.695	1.265	6.34	17.90	205.00c	.....	1.00k	3.10k
Toronto	.....	.....	.....	.78	1.425	6.00	.....	157.00	280.00	.87	3.05

*‡ Delivered. *x PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes: Birmingham, Ala., 113.1; Burlington, N. J., 122.0. *b Extra strength ASTM C 200-44T *c 4-in., $113 *d 55361-A *e 30-in. *f 21 in. *g culvert pipe; reinforced, ASTM C 76-41 *h reinforced, ASTM C 76-41 *i reinforced, ASTM C 76-37 *j centrispun; no standard specs. in Canada *k 2% off for cash *l fob plant *m truck delivery *n LCL delivered, fob truck *o listed price based on LCL (no min.) *p freight allowed to destination in city *q ASTM C 13-40 *r CL fob origin, freight allowed *s 2 ft lengths *t 3 ft lengths *u CESA A 60-1941 specs. used *v standard strength *w ea; add 20% for d.s.

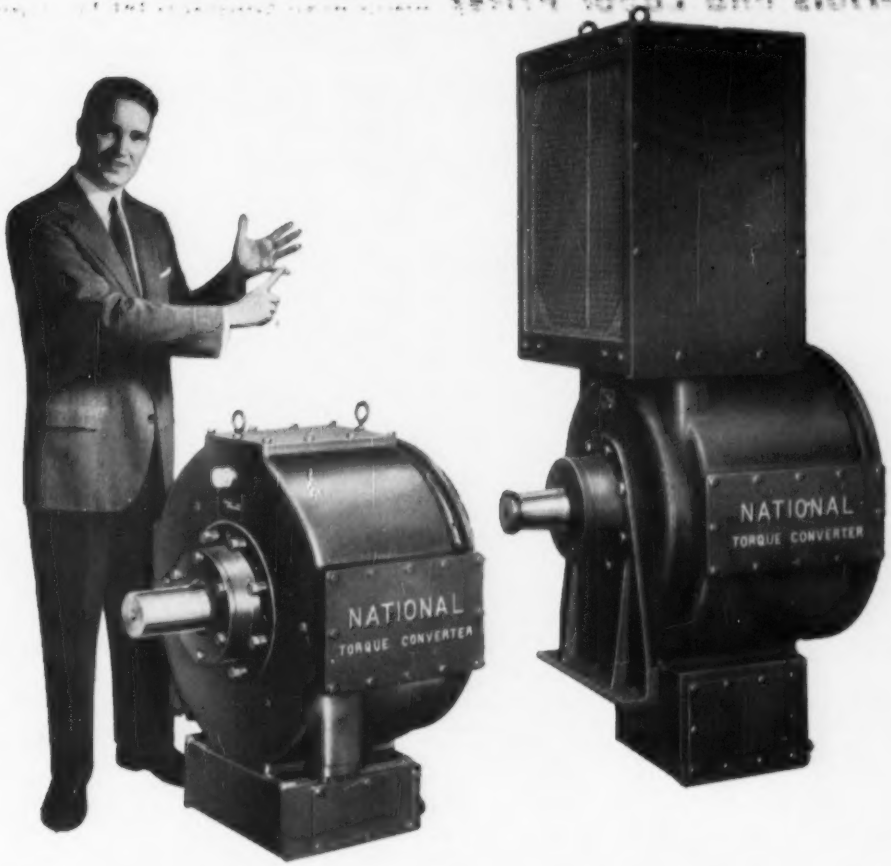
***WROUGHT STEEL PIPE** (Full standard weight) — Discount from list; see footnote

	Butt Weld Black %	Butt Weld Galv. %	Lap Weld Black %	Lap Weld Galv. %	Mill
1¼ to 6 in.	19.50u	17.50u	19.50u	17.50u	Lorain, Ohio
	19.50u	17.50u	19.50u	17.50u	Aliquippa, Pa
	19.50u	17.50u	19.50u	17.50u	Sparrows Pt., Md.
2½ & 3 in.	11.75	10.75	+ 0.75d	+ 0.75d	Beaver, W. Va.
	15.25	10.75	+ 3.25d	+ 3.25d	Youngstown, O.
	8.75	7.00ab	+ 0.25b	+ 0.25b	Indiana Harbor, Ind
2½ & 3 in.	25.00	29.00	10.75	+ 0.75b	Sharon, Pa
Butt Weld	25.00	29.00	10.75	+ 3.25d	Wheatland, Pa.
	25.00	29.00	15.25	+ 7.25b	Etna, Pa
	25.00	16.50b	2.75b	+ 7.25b	Fontana, Calif.

† Threaded and coupled; a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in.

*** WROUGHT STEEL PIPE:** Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft.(*based on approx. $200 per net ton): Butt Weld ⅛ in., 8½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 79½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 66.54, galv., + 95.77; 1¼ in. black, + 65.54, galv. + 95.77, 1½ in. black, + 61.79 galv, + 91.22; Lap Weld—2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.



you get all these features with a National Torque Converter

Now, with National Torque Converters, you can give your equipment smoother power, steadier power over a wider range of loads . . . with exact matching of torque converter to engines of 100 to 1000 horsepower . . . plus *all* these features:

Unsurpassed durability: The rugged design and construction of National Torque Converters provide longer service life with minimum maintenance.

Simplicity of design of National Torque Converters permits ease of installation, operation and maintenance.

Reproducible efficiency of each size and capacity of National Torque Converters permits standardization on your equipment with assurance of uniform top performance on every job.

Top performance: Precision fabrication of National Torque Converters of parts made to close tolerances provides uniformly smooth transmission of power hydraulically from engine to job or load, enabling engine to operate at its optimum speed and thus, to deliver maximum horsepower as required . . . and without ever stalling the engine.

Faster job cycles: Quicker starting and faster acceleration of load with a National Torque Converter in the power system means more work per equipment per operator per day . . . every day.

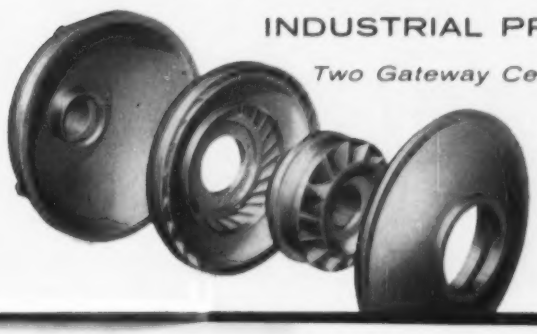
Full range of circuit sizes: You have a choice of 6 basic hydraulic circuit sizes, each with a range of input ratings, to permit exact matching of torque converter to specific power-speed characteristics of a prime mover.

Why not let a National engineer make specific recommendations of the correct size and capacity of National Torque Converter for your equipment.

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.



Pace-setters in the progress of industrial power transmission

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Bangor**—BA 7/18—U. S. Eng., 150 Causeway St., Boston, Mass., storm drain exten. "J" Dow Air Force Base, ENG-19-016-56-196, $75,000-$100,000. Plans deposit $10 refundable. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., engrs. CD 6/27.

BUILDINGS—BA

Me., Waterville—HOSPITAL—BA 7/24—Thayer Hospital, Bd. Trustees, North St., hospital addn., North St. $400,000. Plans deposit $50, refundable. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archts.

BUILDINGS—SLC

Conn., Enfield—SHOPPING CENTER—Allen Hefflin, c/o Walter J. Douglas Assocs., archts., 1095 Farmington Ave., West Hartford, soon lets contract shopping center, Enfield St. $800,000. CD 6/18.

HEAVY CONSTRUCTION—LB & CA

† **Consolidated Constr., Inc.,** 807 Congress St., Portland, Me. LB $238,499, est. $231,700. (only bidder) addnl. modifications to DC Maintenance Hangars, Loring Air Force Base, ENG-19-016-56-174, LIMESTONE, ME. U. S. Eng., 150 Causeway St., Boston, Mass. The Kuljian Corp., 1200 N. Broad St., Phila., Pa., engrs.-archts. CD 6/6.

† **A. A. Salerno,** 41 Relyea Pl., New Rochelle, N. Y. LB $417,990, est. $350,000-$400,000. constr. addnl. bldgs., Nike Battery, Defense Area No. 2, Fairfield, ENG-19-016-56-171, CONNECTICUT, U. S. Eng., 150 Causeway St., Boston, Mass. Bids June 22. CD 5/31.

CONNECTICUT—State Hy. Dpt., State Office Bldg., Hartford,
received no bids June 26, Proj. 31-86, bridges and culverts, New Milford, Washington, Cornwall, Litchfield, North Canaan, Litchfield Co. CD 6/15.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford,
Conn.—**Oneglia & Gervasini, Inc.,** Casson Ave., Torrington, Conn., LB $82,710 (3 bidders) Proj. 31-85, bridge over Hollenbeck River in Cornwall, culverts, etc. Cornwall, Goshen and Litchfield, Litchfield Co.; LB $199,215 (2 bidders) Proj. 143-64, bridge and box culverts, etc. Torrington and New Hartford, Litchfield Co.; LB $246,990 (1 bidder) Proj. 143-66, three bridges, box culverts and approaches, Torrington and New Hartford, Litchfield Co.;
Conn.—**Mariani Constr. Co.,** 222 Forbes Ave., New Haven, Conn. LB $419,313. (6 bidders) substructure and superstructure, Division St. Bridge over Naugatuck River, Proj. 2-55 and 2-57, Ansonia, New Haven Co.;
Conn.—**DeFonce Constr. Co., Inc.,** 110 Colonial Ave., Bridgeport, Conn. LB $103,010. (2 bidders) Proj. 161-70, three bridges and approaches, Wilton, New Canaan and Ridgefield, Fairfield Co.;
Conn.—**Palmer Tarinelli Constr. Co., Inc.,** 144 Island Brook Ave., Bridgeport, Conn. LB $188,848. (5 bidders) Proj. 89-55, four bridges and approaches, New Canaan and Wilton, Fairfield Co.;
Conn.—**Della Bitta-Bassota, Inc.,** Werking St., Plantsville, Conn. LB $308,636. (2 bidders) Proj. 55-89, five bridges and approaches, Granby and Suffield, Hartford Co.;
Conn.—**Enfield Road Constr. Co., Inc.,** Depot Hill, Warehouse Point, Conn. LB $193,088. (1 bidder) Proj. 48-84, bridges, culverts, etc. Enfield, Somers and East Windsor, Hartford and Tolland Counties. Bids June 25. CD 6/19.

BUILDINGS—LB & CA

† **Beacon Constr. Co.,** 102 Hano St., Allston, Mass. LB $899,000, est. $764,105. family HOUSING, Nahant, Wakefield, Wayland and Burlington, ENG-19-016-56-177, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids June 26. CD 6/14.

Palmer, Zoppo Co., 840 Providence Hy., Norwood, Mass. CA approx. $400,000. 40,000 sq. ft. INDUSTRIAL BLDG., NORWOOD, MASS. Detroit Controls, c/o contractor. Korslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, Mass., archts.

F. D. Rich, 322 Main St., Stamford, Conn. CA $400,000. OFFICE BLDG. Addns., GREENWICH, CONN. Homelite Corp., Greenwich, Conn. Bids May 22. CD 5/11.

Alexander Schnip & Sons, Inc., 107 Forest St., Norwich, Conn. LB $514,216. COUNTY JAIL, INFIRMARY and JAILERS RESIDENCE, Montville, NEW LONDON, CONN. New London Co., Court House, New London, Conn. Bids June 22. CD 6/8.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Colonie (Br. Albany)—BA 7/19—Town of Colonie, c/o Town Clk., Town Hall, Newtonville, Sec. A, general constr. on exten. of filter plant bldg., concrete filter tube, grading, walks, roads, etc.; Sec. B, filter plant equip. consisting of filter bottoms, sand, gravel, pipe gallery, piping, valves, specials, standards, instruments and misc. equip.; Sect. C, coagulators, settling basins, piping and equip., aerator and equip., imprvs. to present coagulator; Sect. D, plumbing work, Sect. E, heating work; Sect. F, electrical work; Sect. G, outside piping at filter plant, the booster pump station has been divided into four sections as follows, Sect. 1, constr. bldg., installation of piping, valves, appurtenauces, Sec. 2, furnishing 4,400 G.P.M. pumps with motors, appurtenances; Sec. 3, furnishing pipe and fittings, Sec. 4 valves and appurtenances. Plans deposit $25. Keis & Holroyd, 257 Broadway, Troy, consult. engrs.

N. Y., **Syracuse**—BA 7/26—Robert W. Sollinger, county purch. agt., County Court House, Zone 2, general constr., electrical work, mechanical equip. and piping for constr. of main pumping station, West Side Sanitary District, for Onondaga Pub. Wks. Comm. Plans deposit $10. O'Brien & Gere, 400 E. Genesee St., Zone 2, consult. engrs., adv. ENR 7/12. CD 12/6.

N. Y., **Syracuse**—BA 7/26—Robert W. Sollinger, county purch. agt., County Court House, Zone 2, West Side Force Main, main pumping station of the West Side Sanitary Dist. to Hiawatha Blvd., West Side Sanitary District, Contr. No. 5, incl. approx. 9,350 lin. ft. 24 in. rein.-con. pressure pipe sewage force main, incl. two railroad crossings, brook crossing, rip-rap protected embankment together with various appurtenances, for Onondaga Pub. Wks. Comm. Plans deposit $10. O'Brien & Gere, 400 E. Genesee St., Zone 2, consult. engrs., adv. ENR 7/12. CD 12/6.

N. Y., **New York**—MAIN POWER EQUIPMENT—BA 7/27—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, furnishing, installing main power equip. for 59 Street Power Plant, Manhattan, P-162.

BUILDINGS—BA

† N. Y., **West Point**—CLUB—BA 7/19—U. S. Eng., 111 E. 16 St., New York, Zone 3, N.C.O. club, U. S. Military Academy. CD 6/22, under LB.

▲ Pa., **Ambler**—SCHOOL—BA 8/2—Ambler Joint High School Auth., 1 story, 237x333 ft., brick Shadygrove Junior High School. $1,100,000. Buchart Engineering Co., 611 Market St., York, engr.-archt. CD 12/22.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $75,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**

PROPOSED WORK

Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† **Federal Government**
▲ **Project of $1,000,000 or over.**
ENR **Engineering News-Record**
CD **Construction Daily**
For additional reports see Construction Daily.

BUILDINGS—SLC

Del., New Castle—CHURCH, etc.—Wilmington Manor Methodist Church, New Castle, soon lets contract church, Sunday school and parking area. $500,000. Thomas J. McCormick, 123 S. Broad St., and Harold E. Wagoner, 117 S. 17 St., both Phila., Pa., archts. CD 10/14/54.

HEAVY CONSTRUCTION—LB & CA

Rock Asphalt, Inc., 223 Erie St., Buffalo, N. Y. LB $121,659. resurf. Niagara St. from Hertel to city line, BUFFALO, N. Y. City, Dpt. P. Wks., City Hall, Buffalo, N. Y. Bids June 22.

† **Wright & Kremers, Inc.,** Niagara Falls, N. Y. LB $386,983 (1) $370,667 (2) north lean-to N.A.R.T. hangar, U. S. Naval Air Station, NBy 3966, Spec. 3966/56, NIAGARA FALLS, N. Y. Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York 7, N. Y. Bids June 21. CD 6/7.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

F. A. Canuso & Sons, Inc., 173 W. Roosevelt Blvd., Phila., Pa., CA, $560,905. dualization of Route 42 from Kendall Blvd. to South Branch of Newton Creek in Boros of Oaklyn, Audubon Park and Audubon and Twp. of Haddon, Camden Co. Bids June 12, awarded June 26. CD 6/18, under LB.

† **Great Lakes Dredge & Dock Co.,** 17 Battery Pl., New York 4, N. Y. LB $527,472 (2 bidders) dredging to depth of 35 ft. below mean low water involving removal of approx. 391,300 cu. yds., place measurement, all material except ledge rock from approach channel to Caven Point Terminal, ENG-30-075-56-489, NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids June 26. CD 6/18.

▲† **Five Boro Constr. Corp.,** Lafayette St., New York 7, N. Y. CA $1,179,850. (only bidder) Special AAA Facilities, Ramsey, ENG-30-075-56-22, NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 6/27, under LB.

† **R. M. Duval,** 54 State Highway No. 17, Paramus, N. J., LB $998,486. heavier than air Hangar and operation facilities, Naval Air Station, NOy 4719, Spec. 4719, LAKEHURST, N. J. Dpt. Navy, Phila. Naval Base, Phila., Pa. W. W. Slocum & Co. and Bauer & Corbett, 1 Clinton St., Newark, N. J., archts.-engrs.

Borough, Borough Hall, Oceanport, N. J., rejected bids June 7, reconstr. Port Au-Peck Ave. and Comanche Dr., b. conc. paving, OCEANPORT, N. J. New bids June 28. CD 5/23.

Conrad Hanson Co., Box 42, Phoenix, Md. LB $363,000. Contr. 15-BW Dorsey Rd. water filtration plant and pump station, near Baltimore, GLEN BURNIE, MD. Anne Arundel Co. Sanitary Comn., Glen Burnie, Md. Bids June 27. CD 6/5.

Myers & Quigg, Inc., 91 "O" St. S.E., Wash., D. C., LB $209,961 (5 bidders) concrete curb, gutter and b. conc. surf. various locations WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids June 5.

BUILDINGS—LB & CA

▲ **Director Bureau Constr.,** 42-15 Crescent St., Long Island City 1, N. Y. received no bids June 27, general contract new P.S. 175 West 134 and 135 Sts., between Lenox and Seventh Aves., Manhattan Boro, NEW YORK, N. Y. CD 6/12.

Mayville Manor, Inc., 150 W. Lake Ave., Rahway, N. J. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, CAPE MAY COURT HOUSE, N. J.

Louis Rostock, 723 Cherry Tree Lane, Trenton, N. J. Separate Contracts. $390,000. RESIDENTIAL DEVELOPMENT, Harmony Terrace, LAWRENCEVILLE, N. J.

▲ **Lake Manahawkin Estates,** c/o William P. Thomas, Ship Bottom, N. J. Separate Contracts. $1,500,000. RESIDENTIAL DEVELOPMENT, Strafford Twp., MANAHAWKIN, N. J. Galen H. Schlosser, 1411 Walnut St., Phila., Pa., archt.

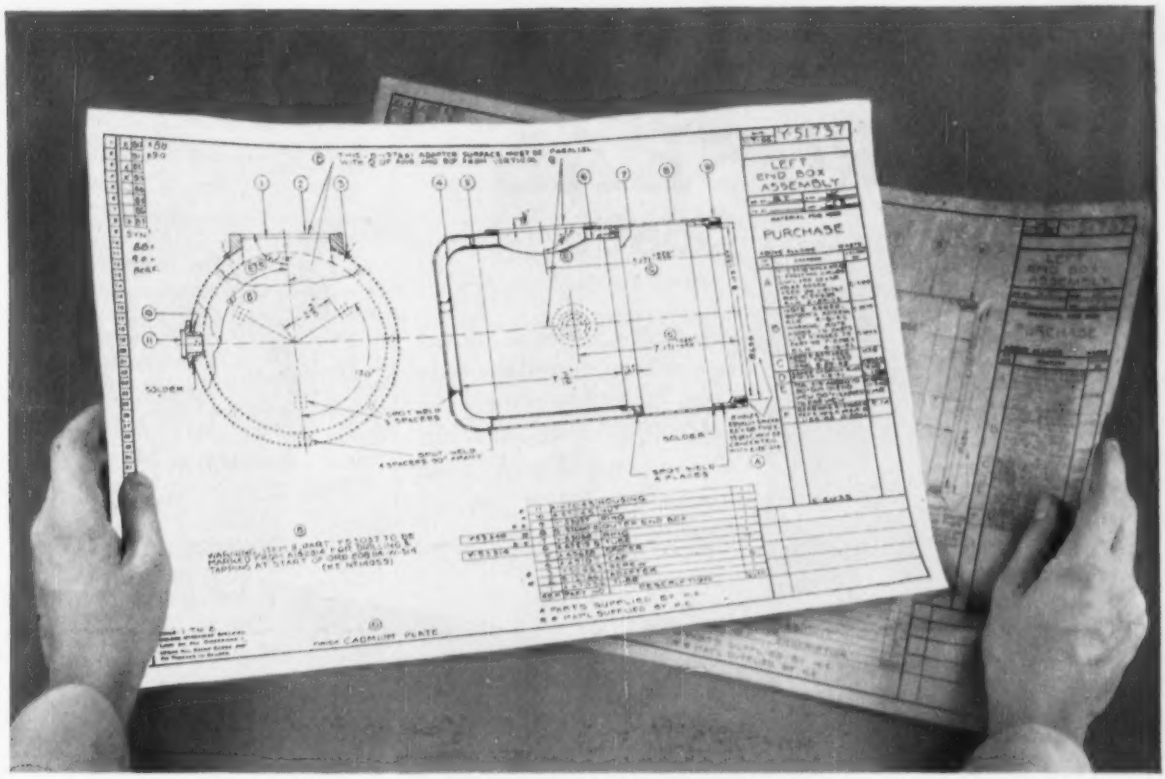
Penn Town Homes, Inc., 5515 Westfield Ave., Pennsauken, N. J. Separate Contracts. $400,000. RESIDENTIAL DEVELOPMENT, 43 St., PENNSAUKEN, N. J. Faint & D'Anastasio, 5521 Westfield Ave., Pennsauken, N. J., archts.

† **Herbert Lawrence Bright, Inc.,** 427 O St. S.W., Wash., D. C. LB $614,397. (1 bidder) MCA family HOUSING at AAA sites, Croom, Brandywine and Waldorf, ENG-49-080-56-64-(67) and (68), MARYLAND. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Mills, Petticord & Mills, 3308 14 St. N.W., Wash., D. C., archts. Bids June 26. CD 6/8.

▲ **American Bridge Div., U. S. Steel Corp.,** Federal Land Bank Bldg., Baltimore 10, Md. LB $1,624,500. (3 bidders) structural steel for state OFFICE, BALTIMORE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Bids June 26. CD 6/19.

Kark W. Corby, 908 20 St. N.W., Wash., D. C. Owner Builds. $350,000, 6 story concrete, masonry OFFICE, 1913 Eye St. N.W., WASH., D. C. Justement, Elam & Darby, 2011 K St. N.W., archts.

(Continued on page 80)



This Autopositive Paper intermediate was made from an old, "yellowed" drawing

To restore old drawings

without retracing a line

Take one of your old pencil drawings that is so worn and yellowed it will no longer produce acceptable prints.

Reproduce it on Kodagraph Autopositive Paper, and you'll get a positive reproduction directly.

Now run prints from this photographic intermediate. You won't believe your eyes—the lines are crisp, legible... the background wonderfully cleaned up. *These* are prints you can use!

With Kodagraph Autopositive Paper around, it just doesn't pay to waste hours retracing "unprintable" originals, as thousands of drafting rooms have discovered.

Learn all the ways you can save with Kodagraph Reproduction Materials, which you, or your local blueprinter can process quickly, at low cost.

EASTMAN KODAK COMPANY
Graphic Reproduction Division, Rochester 4, N. Y.

New booklet is jam-packed with valuable tips on saving drafting time, protecting drawings, getting better prints.

Kodagraph Reproduction Materials

MAIL COUPON TODAY

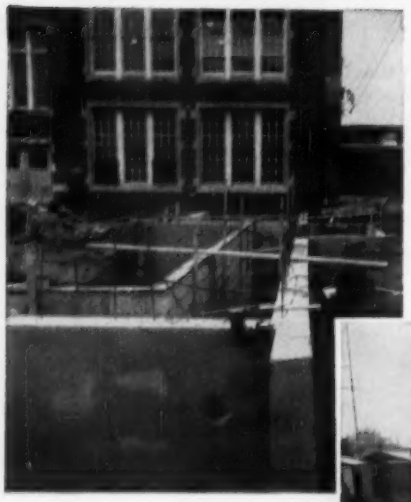
EASTMAN KODAK COMPANY 7-67
Graphic Reproduction Division, Rochester 4, N. Y.
Gentlemen: Please send me a free copy of your new booklet on Kodagraph Reproduction Materials.

Name_____ Position_____
Company_____
Street_____
City_____ Zone_____ State_____

Kodak
TRADE MARK

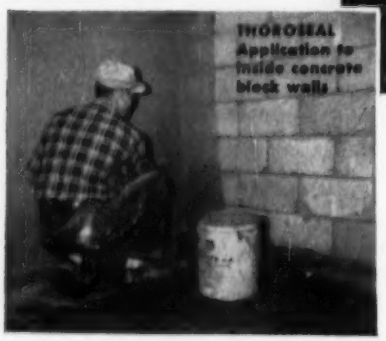
How to make a school foundation
water repellent, sturdy and *long lasting*

THOROSEAL
Foundation Coating



Correct procedure is shown here, where foundation is given 2 brush coats of THOROSEAL Foundation Coating, immediately after construction forms are removed.

Poured concrete exterior walls and tunnel walls, 2 coats of Foundation Coating, and inside concrete block walls, 2 coats of THOROSEAL



Bagley School
Pontiac, Michigan
Architect—William Zimmerman
Contractor—Nolan Gottschall

NO MAINTENANCE COST HERE!

THOROSEALING the foundation walls of this new school building, means less upkeep, less repairs. Water cannot penetrate masonry now and cause costly damage.

Get our pictorially described literature
"HOW TO DO IT"
STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE, PENNSYLVANIA

(Continued from page 78)

SOUTH

HEAVY CONSTRUCTION—BA

Louisiana—BA 7/9—State Dpt. P. Wks., P. O. Box 4155, Capitol Station, Baton Rouge, drainage imprvs. of Little River and Old River consisting of approx. 110,000 cu. yd. channel excav., Avoyelles Parish.

Va., Norton—BA 7/25—City, Ross F. Walker, mgr., City Hall, Contr. 2, impounding dam, reservoir and appurtenances. Plans deposit $25. The Chester Engineers, 601 Swismon St., Pittsburgh 12, Pa. engrs.

Ala., Huntsville—BA 7/26—Water Works Bd., City of Huntsville, City Hall, WW imprvs., deep well supply and booster pump station, $125,000-$150,000. J. W. Goodwin Engineers, 2111 7th Ave. S., Birmingham, engrs. CD 5/4/55.

† Ga., Brunswick—COMMUNICATIONS FACILITIES—BA 7/28—Dist. P. Wks. Office, Bldg. No. 12, U. S. Naval Base, Charleston, S. C., communications facilities, Naval Air Station, Glynco, NOy 86692. Extended date. CD 6/7.

BUILDINGS—BA

† Canal Zone, Corozal—ORDNANCE SHOP—BA 8/10—U. S. Eng., Box 4970, Jacksonville 1, Fla., ordnance shop alterations, (FY-53), Corozal, ENG-08-123-57-1. Plans deposit $25. CD 6/28.

HEAVY CONSTRUCTION—LB & CA

▲ VIRGINIA—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond,

E. V. Williams Co., Inc., 1269 E. Princess Anne Rd., Norfolk, Va., W. H. Scott, Inc., Franklin, Va. and Sanford Constr. Co., Sanford, N. C., LB $3,689,966, (2 bidders). Contr. B-1B, Hampton approach highway and structures, incl. LaSalle Ave. Exten. Bids June 27. CD 6/13.

▲ Atlas Tile & Marble Works, Inc., 41-17 Crescent St., Long Island City, N. Y., LB $2,193,456, Contr. C-4A, tunnel ceiling finish; Contr. C-4B, tunnel side-wall finish, Hampton Roads Tunnel Proj., VIRGINIA. Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond, Va. Bids June 27. CD 6/13.

† C. W. Lockwood & Sons, Inc., Rip Rap Rd., Hampton, Va., LB $801,397, (3 bidders) field house, ENG-44-110-56-40, FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk 1, Va. Bids June 27. CD 6/20.

† Strickland Bros., 1817 County St., Portsmouth, Va. LB $133,327, (3 bidders) overhead power and free trolley conveyor, Bldg. LP-20, Naval Air Station, NBy 3625, Spec. 3625/56, NORFOLK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 14. CD 5/23.

† Virginia Engineering Co., Inc., 80 29th St., Newport News, Va., LB $317,000, (2 bidders) repairs and addns. to air strip, Armed Forces Experimental Training Activity, Camp Peary, NBy 3634, Spec. 3634/56, WILLIAMSBURG, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 26. CD 6/8.

WEST VIRGINIA—State Rd. Comn., Charleston, Zone 5,

W. Va.—Acme Constr. Co., Box 1330, Beckley, W. Va., LB $108,580. Coney Island Bridge and approaches 0.164 mi. Proj. F 190 (5), Contract No. 2, McDowell Co.;

W. Va.—Wallace Constr. Co., 2785 Third Ave., Huntington, W. Va., LB $499,408, Proctor Creek Bridge and approaches, 0.511 mi. Proj. F 184 (11), Wetzel Co. Bids June 26. CD 6/20.

▲ WEST VIRGINIA—State Road Comn., Charleston, Zone 5,

W. Va.—Feather Constr. Corp., Morgantown, W. Va., LB $315,520, b. conc. bottom base and wear course and guard rail 4.484 mi. Osage-Pennsylvania State 1 Line Rd., Monongalia Co.;

W. Va.—Asphalt Products Co., Martinsburg, W. Va., LB $96,222, b. conc. surf. 3.39 mi. Grant Co. line-Jct. Rte. 42, Proj. 122-A, Mineral Co.; LB $152,894, b. conc. surf. 12.6 mi. Petersburg-Pendleton Co. line, Proj. 3531, Grant Co.;

W. Va.—Harry Hatfield & Co., Barboursville, W. Va., LB $398,987, grading, draining 3.877 mi. Ripley-Mt. Alto Rd. Proj. F 139 (8), Jackson Co.;

W. Va.—J. F. Allen Co., 109 Euclid Ave., Clarksburg, W. Va., LB $206,318, grading, draining 1.661 mi. Wallace Lumberport Rd. Proj. S 243 (4), Cont. 1, Harrison Co. Bids June 26. CD 6/20.

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,

N. C.—Crowder Constr. Co., Inc., 1123 E. 10 St., Charlotte, N. C., LB $509,580, est. $400,000-$500,000, (14 bidders) structures on 4.21 mi. US 15 and US 501, Proj. 4140, SF-716 (1), Durham Co.;

N. C.—John H. Brinkley, Thomasville, N. C., LB $79,296, est. $75,000-$100,000, structures on 7.87 mi. US 421 (reloc.), Proj. 7940, F-713 (2), F-20 (2), Wilkes and Yadkin Counties;

N. C.—Kitchin Constr. Co., Box 3277, Fayetteville, N. C. LB $94,011, est. $50,000-$75,000, structures 9.88 mi. US 264, Proj. 1032, SF-204 (3), S-881 (1), B. S. 2-6-15-127, Beaufort Co.;

N. C.—Wilson Constr. Co., Inc., Box 603, Salisbury, N. C. LB $148,310, est. $125,000-$150,000, (4 bidders) structures 4.9 mi. Proj. 1-503, S-821 (1), Northampton and Hertford Counties;

N. C.—James T. Triplett, Inc., Chester, S. C., LB $105,088, est. $75,000-$100,000, (4 bidders) replacing two bridges US 64, Proj. 1565, F-215 (19), Martin Co. Bids June 26. CD 6/18.

(Continued on page 83)

Advertisement

New York State Engineers build road in spite of slashed budget. Bitumuls with local aggregate is selected.

WHEN a drastic cut in appropriations forced the New York State Department of Public Works to reduce a project to a minimum expenditure, they turned to the proved method of Bitumuls-Native Aggregate construction. Based on the experience of several of the counties in the region, they knew this to be a sound method of stretching road-building dollars.

Rotary mixer and Bitumuls tank truck work in tandem to stabilize 4" lift of base aggregate.

The original plan

Airport construction at Riverhead, Long Island forced the relocation of the Wading River-Manor Road. As engineered by the State Department of Public Works, plans for this road originally called for two 24 ft. lanes for a length of approximately 6 miles. Financing, through the U.S. Bureau of Public Roads, struck a snag; and drastic economies were required to keep the job alive. In adjusting to the lower appropriation, it was decided to reduce the project to one 24 ft. lane, of a length allowable under the available monies.

New estimates indicated this would amount to approximately 3.16 miles, and invitations based on this distance were put out for bids. These specifications called for an 8 inch stabilized base, with 1" Asphaltic Concrete surfacing.

Job data

Local selected soil, sand, and gravel blended to meet the following dry sieve specifications were used for the stabilized base work on this job.

PERCENT BY WEIGHT PASSING		
Sieve	Specification	Aggregate Used
1 ½" Sieve	100	100
1" Sieve	90-100	84.5
¾" Sieve	60-80	78.3
¼" Sieve	30-50	64.2
#10 Mesh	20-40	50.5
#40 Mesh	10-30	10.9
#80 Mesh	7-8	5.6
#200 Mesh	5-15	3.8
Emulsified Asphalt	5-7%	5.75%

The amount passing the 200 mesh was specified to be not more than one-half the amount passing the 40 mesh sieve.

Aggregate was blended at the pit, approximately five miles from the job site, tested, then trucked to, and spread on, the sub-base. Enough such material for the bottom four inches of the base course was brought in and spread. Bitumuls Emulsified Asphalt, mixing grade, was pumped directly from the transport truck into a Rotary type mixer. This first 4" base course was mixed, rolled, and cured. Aggregate was then brought in for the second 4" course and the process repeated.

Heavy rains encountered

During the construction of the base course, two separate hurricanes interrupted job-progress. Delay was held to a minimum because Bitumuls readily coats damp aggregate, and damage caused by the storm was restricted to exposed areas of the sub-base plus those areas of the stabilized base that were not cured.

Surface course construction

The 8" Bitumuls Stabilized Base was topped with 1" fine aggregate Asphaltic Concrete surface course. Spreading and compaction of this material was accomplished by conventional methods. The surface course was extended 1 ft. on either side of the 24 ft. pavement to provide a degree of shoulder stability. Upon final acceptance, the road was turned over to the town of Riverhead, New York, by the contractor.

Sound paving, with economy... Bitumuls Emulsified Asphalt used with local aggregate

ROAD-BUILDERS throughout the nation have come to recognize the value of Bitumuls® Emulsified Asphalt in holding the cost of road construction to the lowest possible level.

A major factor in this economy: *Bitumuls' compatibility with local or in-place aggregates, even though they be hydrophilic.* This eliminates costly transportation of imported materials.

Our Engineers, operating out of our nationwide network of offices, will gladly provide complete information on specific grades of Bitumuls for various types of pavement construction.

Bitumuls is used extensively for maintenance work, too. *Call our nearest office for complete details.*

ABA

American Bitumuls & Asphalt Company

200 Bush Street, San Francisco 20, Calif.

St. Louis 17, Mo. — Cincinnati 38, Ohio
Tucson, Ariz. — Inglewood, Calif.
Perth Amboy, N. J. — Baltimore 3, Md.
Mobile, Ala. — San Juan 23, P. R.
Oakland 1, Calif. — Portland 7, Ore.

LEADING MARKETERS OF ASPHALTS, CUTBACKS AND BITUMULS—NATIONWIDE

Colorado contractor's KOMPACTOR WORKS CLOSE-UP

eliminates all hand tamping costs!

"We're more than satisfied with the close compaction of the K-45," says Domenic Leone, referring to the excellent work the self-propelled K-45 Kompactor is doing on his $1,026,762.25 job on State Highway 1 in El Paso County, Colorado.

Domenic Leone Construction Company, Inc., Trinidad, Colorado, is compacting 1,722,000 cubic yards on 12.726 miles of highway south of Colorado Springs. Included are 6 concrete box culverts, 10' x 12', making close compaction a necessity.

Not only has the highly maneuverable K-45 eliminated hand tamping on culverts . . . it also averages 1100 yards an hour on banked material. Faster speeds, up to 5 mph, and its "interrupted pressure" principle of operation that directs *all* compaction effort downward, enabled Domenic Leone to replace several other pieces of compaction equipment with *one* K-45 Kompactor.

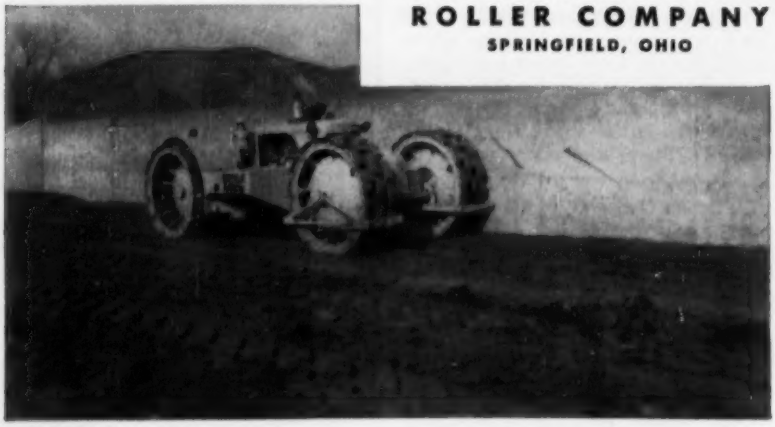
Write today for full information—or see your nearest Buffalo-Springfield distributor.

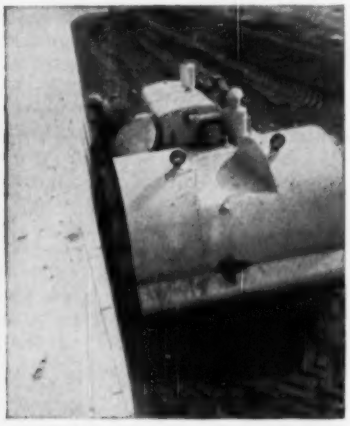
Here's how close the flexible K-45 can work to culverts and abutments, and it's faster, better, more efficient in the "wide open spaces" too.

The Standard *of Comparison*

BUFFALO-SPRINGFIELD ROLLER COMPANY

SPRINGFIELD, OHIO





(Continued from page 80)

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,

N. C.—**Blankenship Bros.**, Box 3686, Charlotte, N. C. LB **$187,464**, est. $200,000-$225,000, grading 7.87 mi. US 421 (reloc.) Proj. 7940, F-713 (2), F-20 (2), Wilkes and Yadkin Counties;

N. C.—**Asheville Contrg. Co.**, Box 5119, Biltmore Station, Asheville, N. C., LB **$290,373**, est. $225,000-$250,000, CABC, bit. surf. tr. 5.29 mi. Proj. 0-502, FH-35-B, Macon Co.;

N. C.—**Thompson-Arthur Paving Co.**, Box 1197, Greensboro, N. C., LB **$115,831** (3 bidders) b. conc. binder and surf., H and I. 6.91 mi. US 220 and US 421. Proj. B.S. 7-6-49-103, Guilford Co.; LB **$415,163**, est. $300,000-$400,000 (5 bidders) subgrade reinf. and c. conc. pavement 2.08 mi. Proj. 5363, U-676 (8) Guilford Co.;

N. C.—**Nello L. Teer Co.**, Trust Bldg., Durham, N. C. LB **$570,597**, est. $300,000-$400,000, (14 bidders) grading 4.21 mi. US 15 and 501. Proj. 4140, SF-716 (1), Durham Co.; LB **$155,344**, est. $125,000-$150,000 (9 bidders) sand asph. base, surf. 12.3 mi. US 601, Proj. B.S. 10-6-69-160, Union Co.;

N. C.—**Blythe Bros. Co.**, Box 989, Charlotte 1, N. C. LB **$163,281**, est. $150,000-$175,000 (2 bidders) sand asph. surf., b. conc. surf. 57.1 mi. Proj. B.S. 10-7-67-19, B.S. 10-7-67-24, B.S. 10-7-67-85. Code 5900-1003, Mecklenburg Co.;

N. C.—**F. D. Cline Paving Co.**, Box 349, Raleigh, N. C. LB **$209,578**, est. $200,000-$225,000 (7 bidders) b. conc. binder and surf. H&I. 14.8 mi. US 19 and 23, Proj. B.S. 13-6-86-160, Madison Co.;

N. C.—**Dickerson, Inc.**, Box 448, Monroe, N. C. LB **$285,710**, est. $250,000-$300,000, CABC, bit. surf. tr. 9.88 mi. US 264. Proj. 1032, SF-204 (3), S-881 (1), B.S. 2-6-15-127, Beaufort Co.;

N. C.—**James F. Powell, Jr.**, 1310 Williamson Dr., Raleigh, N. C., LB **$110,405**, est. $75,000-$100,000. (4 bidders) STBC, bit. surf. tr. 4.9 mi. Proj. 1-503, S 821 (1), Northampton and Hartford Counties;

N. C.—**Barrus Constr. Co.**, Box 395, Kinston, N. C., LB **$261,107**, est. $300,000-$400,000 (6 bidders) STBC, b. conc. binder and surf. 7.43 mi. US 70 and US 117, Proj. 2832, F-13 (15), F-12 (8), Wayne Co.;

N. C.—**Talman Constr. Co.**, 919 S. Second St., Wilmington, N. C., LB **$110,302**, est. $100,000-$125,000 (10 bidders) grading 8.96 mi. NC 87. Proj. 3152, D-AD-4(3), Brunswick Co. Bids June 26. CD 6/18.

† **L. A. Downey & Son**, Alston Ave. Rd., Durham, N. C. LB **$235,000** (6 bidders) buildings, railroad tracks, magazines, Naval Auxiliary Air Station, NOy 93523, Spec. 49918, EDENTON, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 26. CD 6/6.

† **Ballenger Paving Co.**, Paris, S. C., LB **$572,800** (3 bidders) apron extens. and taxiway, Marine Corp Air Facility, New River, NOy 91334, Spec. 48268, JACKSONVILLE, N. C. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Bids June 26. CD 6/8.

▲† **McCullough Dredging Co.**, div. of McCullough Industries, 300 S. 41 St., Birmingham, Ala., CA, **$1,025,450**, dredging channel in Apalachicola River from Gulf Intracoastal Waterway to Woodruff Dam, GEORGIA. U. S. Eng., 2301 Grant St., Mobile, Ala. Awarded June 25. CD 6/5, under LB.

† **Parker Constr. Co.**, 150 N. 30 St., Jacksonville, Fla., LB **$443,165**, supply warehouse and railroad trackage, Naval Air Station, Cecil Field NOy 92459, JACKSONVILLE, FLA. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 15. CD 6/5.

† **Ruscon Constr. Co.**, 149 E. Bay St., Charleston, S. C., LB **$687,466**, joint air force-navy electronics facility, Naval Air Station, NOy 89168, JACKSONVILLE, FLA. P. Wks. Office, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 22. CD 6/7.

† **William S. Smith Constr. Co.**, 875 Golfair Blvd., Jacksonville, Fla., LB **$327,689**, radar air traffic control center, Naval Air Station, NBy 89170, JACKSONVILLE, FLA. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 16. CD 5/29.

† **Miller Electric Co.**, 575 Dora St., Jacksonville, Fla., LB **$117,400**, communication facilities in Receiver and Transmitter bldg., Naval Auxiliary Air Station, NOy 90452, MAYPORT, FLA. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 21. CD 5/24.

▲† **Brown & Root Marine Operators, Inc.**, Industrial Rd., Houston, Tex., CA, **$2,641,594** two offshore platforms, Navy Mine Defense Laboratory NOy 91132, Spec. 49090, PANAMA CITY, FLA. P. Wks. Office, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 10. CD 6/26, under LB.

Quinn Constr. Co., P.O. Box 2500, New Orleans, La. LB **$527,929** (9 bidders), 2 new airplane hangars, addn. to existing hangars and repairs to Moffett and Williams Hangars, New Orleans Airport, NEW ORLEANS, LA. Bd. Levee Comrs., 200 Civil Courts Bldg., New Orleans, La. Bids June 21. CD 6/6.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins dir., Jackson,

Mississippi Steel & Iron Co., High St., Jackson, Miss. LB **$382,800**, est. $520,000. structural steel and steel H piles 72,000 lin. ft. for bridges on US Hy. No. 11 in city of Laurel, FI-UI-IN 092-2 (2), IN 092-2 (3), IN-ING-092-2 (4), Jones Co. Bids June 26. CD 6/15.

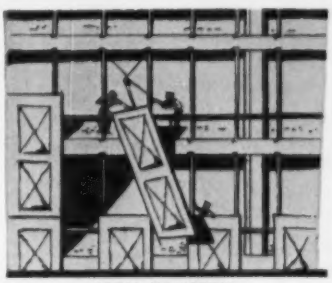
† **Ambrosius Constr. Co.**, 2791 S. Floyd St., Louisville Ky. LB **$247,285**, est. $235,684 (5 bidders), flood protection (seepage), Louisville, Jefferson Co., CIV-ENG-15-029-56-90, KENTUCKY. U. S. Eng. 830 W. Broadway, Louisville, Ky. Bids June 26. CD 6/6.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,

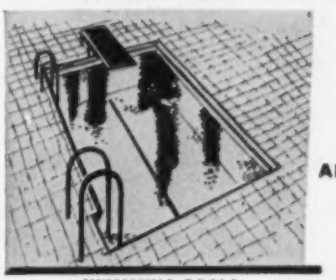
SERVICISED

VERTISEAL

Sealing and Caulking Compound for CONCRETE···METAL···GLASS



METAL TO METAL



SWIMMING POOLS

CONCRETE JOINTS BELOW GRADE

CONCRETE OR METAL TANKS

- Forms a self-vulcanizing, cured rubber seal
- Maintains bond from 0°F. to 250°F.
- Negative cold flow after cure
- Two colors—BLACK . . . WHITE

Servicised VERTISEAL is an extremely efficient and versatile *cold-applied* joint sealing, caulking or glazing compound. It may be used on concrete, metal, glass, masonry or any combination of these materials and sets up into a tough, resilient self-vulcanizing rubber seal which maintains bond from —0° F. to 250° F.

APPLIED BY TROWEL, GUN OR POURING

VERTISEAL Black or VERTISEAL White is available in two consistencies—troweling and gun grade for vertical and sloping application, and pouring grade for horizontal joints. It is especially recommended for vertical joints because it eliminates all possibility of cold flow from the joint. VERTISEAL is most commonly used in foundation walls, swimming pools, water and sewage treatment plants, tunnels, all types of masonry structures, metal and glass surfaces. It is finding new applications in food processing plants, dairies, chemical plants, etc.

PROVIDES EXTREMELY DURABLE SEAL

VERTISEAL is weather and time proof and is resistant to petroleum derivatives, most common acids, fats, alkalis and high temperature liquids. Once installed, VERTISEAL requires no further treatment. Its superior adhesive qualities make it the ideal all-purpose sealer and caulking material for virtually any application.

Write for special VERTISEAL circular. It contains complete information, technical data and specifications.

SERVICISED PRODUCTS CORPORATION

6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

RUBBING CEILINGS?

Do it

GIRAFFE *with a*

CEILING GRINDER

- **FASTER AND EASIER:** One man will average almost 4000 sq. ft. per day. Does not need scaffolding.
- **CHEAPER AND BETTER:** Money saved on finishing will help pay for grinding.
- **DEPENDABLE:** Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

GIRAFFE ®

Heights up to 24 ft.

Has been adapted to cleaning ceilings.

CONCRETE GRINDING CORP.
300 STRAIGHT ST. — PATERSON, N. J.

Miss.—Alvie Goosby, Ripley, Miss. CA **$196,732,** est. $270,000. temporary grav. surf. course culverts 9.084 mi. on Miss. Hy. No. 363 between Mantachie and Kirkville, Proj. S 0805 (2)A, Itawamba Co. Bids June 26;

Miss.—rejected bids June 26. erosion control 5.361 mi. Miss. Hy. No. 24 between Woodville and Fort Adams, Proj. S 0153 (2) A Contr. 1, Wilkinson Co. CD 6/15.

BUILDINGS—LB & CA

† **Merando, Inc.,** 4098 Minnesota Ave. N.E., Wash., D. C., LB **$756,512.** 500-man E. M. BARRACKS, ENG-49-070-56-66-(69), FORT BELVOIR, VA. U. S. Eng., 1st and Douglas Sts. N.W., Wash. 25, D. C. Bids June 26. CD 6/12.

† **Blake Constr. Co.,** 33 E St. S.W., Wash., D. C., CA **$922,000.** POST MAINTENANCE SHOPS BLDG., structural steel, rein.-con. bldg., portions of which are 1 story and 2 story, electrical work, bit. paving, etc., Marine Corps Schools, NOy 2662, QUANTICO, VA. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 13, awarded June 26. CD 6/19, under LB.

▲† **John A. Volpe Constr. Co.,** 1507 M St. N.W., Wash., D. C., CA **$3,275,000,** const. Guadalcanal area CENTRAL CAMP, Marine Corps School, NOy 91991, QUANTICO, VA. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 20. CD 6/26, under LB.

▲ **The Austin Co.,** M & M Bldg., Houston 2, Tex., CA, **$15,000,000.** CEMENT PLANT, 2½ mi. south of Tamiami Trail and west of Krome Ave., MIAMI, FLA. General Portland Cement Co., 111 W. Monroe St. Chicago, Ill. CD 1/27.

Wehr Constructors, Inc., 2127 S. Floyd St., Louisville, Ky. CA **$362,000.** concrete Butler SCHOOL, LOUISVILLE, KY. Jefferson Co. Bd. Educ., 618 W. Jefferson St., Louisville, Ky. Hartstner, Louis & Henry, McDowell Bldg., Louisville, Ky., archts. E. R. Ronald & Assoc., 554 S. Third St., Louisville, Ky., engrs. Bids June 22, awarded June 25.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **Wis., Milwaukee**—TRAINING BLDG.—BA 7/24—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., technical training bldg., and related work, General Mitchell Field, ENG-11-032-56-23. Extended date. CD 6/12.

† **Wisconsin**—BA About 7/26—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul 1, Minn., low water by-pass for spillway, Lock and Dam No. 8, Mississippi River, Genoa. CIVENG-21-018-57-1.

† **Illinois**—BA About 8/3—U. S. Eng., 420 Locust St., St. Louis 2, Mo., triple 84-in. drainage structure, Wilson & Wenkel and Prairie du Pont Drainage & Levee Districts, Proj. Item IV-B (1). St. Clair and Monroe Counties, CIVENG-23-065-57-1.

BUILDINGS—BA

Ind., Gary—SCHOOL—BA 7/17—School City of Gary, 524 Garfield St., Riley Elementary School, 1100 E. 43 Ave. $375,000. David Katz, 355 Arthur St., archts. CD 4/25.

Ill., Waukegan—SCHOOL—BA 7/18—School Dist. 61, 574 McAllister Ave., Junior High School, Ganster & Henninghausen, 222 Washington St., Waukegan, archts. CD 11/11.

▲ **Ind., Jeffersonville** — HOSPITAL — BA 7/31 — Clark County Hospital, Sparks and Missouri Aves., Jeffersonville, present hospital addns., alterations incl. 1 four-story 44x87 ft. wing; 1 four-story 97x140 ft., rein.-con., brick wing, $1,300,000. Walker, Applegate, Oakes & Ritz, 218 Elsby Bldg., New Albany, archts. Southern Eng. Co., 322 W. Jefferson St., Louisville, Ky., engr. CD 12/12.

BUILDINGS—SLC

Ill., Oaklawn—CHURCH, etc.—St. Gerald Parish, 9349 S. Central Park Ave., soon let contract, church, school and convent addn., Central Park and 94 St. $600,000. Pirola & Erbach, 221 N. La Salle St., Chicago, archts. CD 3/16.

HEAVY CONSTRUCTION—LB & CA

Merritt-Chapman & Scott Corp., Standard Bldg., Cleveland, O. CA Est. **$700,000.** Clague Rd. water intake and line, CLEVELAND, O. City, City Hall, Cleveland, O. Former contractor defaulted on job. CD 1/14/55, under CA.

† **WISCONSIN**—Bureau P. Rds., Dpt. Commerce, 4 and Cedar Sts., St. Paul, Minn.,

L. G. Arnold, Inc., 201½ N. Dewey St., Eau Clire, Wis., LB **$204,635** (2 bidders) grav. surf. 6.56 mi. Loretta-Mellen Rd., Forest Hy. 32-A, Chequamegon National Forest. Bids June 22. CD 6/6.

† **C. A. Hooper Co.,** 2026 Pennsylvania Ave., Madison, Wis., LB **$341,000.** central heating system Truax Field, ENG-11-032-56-65, MADISON, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 14. CD 5/29.

Collins & Wilson, 42 S. La Grange Rd., La Grange, Ill. CA **$674,117,** sewage treatment plant addn., 4 sewage pumping stations, sanitary and storm sewers, well and elevated steel water tank, FLOSSMOOR, ILL. Village, Village Hall, Flossmoor, Ill. CD 4/2, under LB.

▲ **Holloway Constr. Co.,** 29350 Joy Rd., Livonia, Mich., CA **$1,850,894** Ashcroft-Sherwood-Livonia drains, relocate and re-tile, DETROIT, MICH. Comr. Wayne Co., 2523 Cadillac Tower, Detroit 26, Mich. CD 6/5, under LB.

BUILDINGS—LB & CA

▲ **Ferro Concrete Constr. Co.,** 203 W. 3 St., Cincinnati, O. LB **$1,060,940.** Woodward SCHOOL addns., CINCINNATI, O. Bd. Educ., 608 E. McMillan St., Cincinnati, O. Bids June 26. CD 5/31.

▲ **J. H. Pomeroy & Co., Inc.,** 333 Montgomery St., San Francisco, Calif., CA Est. **$1,000,000.** 1 story 80,000 sq. ft. brick, concrete block PLANT for mfg. jet turbine blades and vanes, MINERVA, O. Kolcast Industries, Inc., 16601 Euclid Ave., Cleveland 12, O. Dalton & Dalton, The Arcade, Cleveland 14, O., archts. Awarded June 25.

▲ **Dravo Corp.,** Neville Island, Pittsburgh, Pa., CA Est. **$25,000,000.** 15,000 tons iron ore per day SINTERING PLANT, GARY, IND. United States Steel Corp., 71 Broadway, New York, N. Y. CD 3/19.

▲ **Harry H. Verkle,** 645 Wilber St., South Bend, Ind., LB **$1,959,260.** HOSPITAL addn., SOUTH BEND, IND. Memorial Hospital of South Bend, 604 N. Main St., South Bend, Ind. CD 4/12.

P. A. Thrall & Son, 1079 Sard St., Aurora, Ill., CA **$348,609.** Elmwood Dr. Grade SCHOOL, AURORA, ILL. School Dist. 129, 152 Glenwood Pl., Aurora, Ill. Bids May 23. CD 5/7.

La Salle Constr. Co., 343 S. Dearborn St., Chicago, Ill., CA **$350,000.** RESEARCH LABORATORY, 932-50 E. 57 St., CHICAGO, ILL. University of Chicago, 5801 S. Ellis Ave., Chicago, Ill.

O. Jorgenson & Son, Clinton, Iowa, CA **$519,210.** general contract, SENIOR HIGH SCHOOL addn., SAVANNA, ILL. Bd. Educ., Savanna Community High School Dist. 200, Savanna, Ill. Bids June 19. CD 6/28, under LB.

Standard Constr. Co., 250 Builders Exchange Bldg., Minneapolis, Minn., LB **$561,330** (6 bidders) general contract, SENIOR HIGH SCHOOL, BARRON, WIS. Bd. Educ., Barron, Wis. Bids June 26. CD 6/6.

United Home Builders, 7415 W. Mill Rd., Milwaukee, Wis., Owner Builds, **$688,500.** 51 frame, RESIDENCES, BROWN DEER (P. O. Milwaukee), WIS.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† **Texas**—BA 7/24—Soil Conservation Service, Dpt. Agriculture, 1st Natl. Bank Bldg., Temple (2-TX-57) floodwater retarding structure, with earthfill embankments, etc., Site 5, Rowlett Creek of Trinity River at Wylie, Collin Co. Harold R. Baker, P.O. Box 417, Temple, engr. CD 11/19/54.

† **Wyoming**—SUB-STATION, etc.—BA 8/9—Bureau Reclamation, Lpt. Interior, Denver Federal Center, Denver, Colo., one 1,000-kva unit sub-station, one main control board, switchboard carrier-current relaying equip., graphic board equip., ten carrier-current transmitter-receiver sets, unmounted carrier ground relay, and line protective and carrier-current control and auxiliary relays and accessories for Casper, Gering, Lingle Sub-stations, Flatiron Dispatching Station and Glendo and Guernsey Power Plants, Missouri River Basin Proj., Transmission Div. DS-4708. CD 9/12/44.

BUILDINGS—BA

Tex., Austin—PRINTING PLANT—BA 7/24—The Steck Co., 205 W. 9 St., printing, binding, trimming, Rotary Press Plant No. 1. $300,000. Kuehne, Brooks & Barr, Perry-Brooks Bldg., archts. Olin Freedman & Assoc., 156 E. Erie St., Chicago, Ill. B. Segall, Jr., 705 Lamar Blvd., W. C. Walcutt & Assocs., Scarbrough Bldg., and Montgomery & Williams, 710 W. 5 St., engrs. CD 5/18.

Neb., Falls City—SCHOOLS—BA 7/26—Bd. Educ., Falls City, two schools. $655,000. CD 10/11.

HEAVY CONSTRUCTION—LB & CA

F. Morettini, 1416 Maryland Ave. E., St. Paul, Minn. CA **$368,158.** (4 bidders) constr. 27,500 lin. ft. 6- to 10-in. water main, 29,000 lin. ft. 9 in. sanitary sewers, ST. ANTHONY, MINN. Village, H. Henniges, clk., St. Anthony, Minn. Bids June 26. CD 6/14.

▲† **Neilson-Smith Constr. Co. & Northwest Engineering Co.,** 800 2 St. S., Great Falls, Mont. (joint bid) LB **$2,687,854,** est. $2,298,064. paving aprons and constr. of hangars at Malmstrom Air Force Base, Inv. 56-40, GREAT FALLS, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 19. CD 5/21.

BUILDINGS—LB & CA

Lysne Constr. Co., Blooming Prairie, Minn. CA **$718,600.** general constr. SCHOOL, BLOOMING PRAIRIE, MINN. Bd. Educ., Dr. B. Melby, clk., Blooming Prairie, Minn. CD 6/27, under LB.

M. A. Mortenson Constr. Co., Sexton Bldg., Minneapolis, Minn. CA **$726,300.** general constr. 2 story, ground floor, 55x178 ft. North Wing addn. of INSTITUTE, MINNEAPOLIS, MINN. Elizabeth Kenny Institute, 1800 Chicago Ave., Minneapolis, Minn. CD 6/27, under LB.

Standard Constr. Co., 250 Builders Exchange Bldg., Minneapolis, Minn. CA **$517,795.** general constr. 2 story, bsmnt., 123x212 ft. HIGH SCHOOL, Silver Bay, TWO HARBORS, MINN. Bd. Educ., Lake County School Dist., W. H. Norlen, clk., Silver Bay, Minn. CD 6/26.

▲ **Clinton R. Schattgen,** 6001 Bishop Place, St. Louis 23, Mo. Owner Builds. **$1,650,000.** 165 addnl. RESIDENCES in Indian Hills subdivision south of Bayless Ave. off of Union Rd., AFFTON (ST. LOUIS 23 P.O.), MO.

▲ **Clabaugh Constr. Co.,** 7724 Gravois Rd., St. Louis 23, Mo. Owner Builds. Est. **$1,500,000.** 160 RESIDENCES in Indian Hills subdivision off of Union Rd. about ½ mi. south of Bayless Ave., AFFTON (ST. LOUIS 23 P.O.), MO.

Dickie Constr. Co., 317 N. 11 St., St. Louis 1, Mo. CA **$915,186.** 4 story, 169x67 ft., brick, concrete, steel HOSPITAL addn., PAGEDALE (ST. LOUIS 14 P.O.), MO. St. Vincent's Hospital, Daughters of

(Continued on page 86)

Switch to extra-tough AMSCO® MANGANESE STEEL TRACTOR SHOES

When the going is extra tough, as in rocky areas or abrasive mineral soils . . . tractor shoe replacement can become a major cost item. Both repair time and down time eat up profits.

Switch to "the toughest steel known" . . . Amsco Manganese Steel . . . for tracks and grouser bars. Check their much longer service life against the moderate extra cost. Add to this the greater efficiency and pulling power of your tractor, over a longer period of time. The answer: *important operating economies.*

Amsco Manganese Steel gives excellent resistance to abrasion accompanied by impact . . . actually *work-hardens* in use. Write for full information on long-wearing Amsco Manganese Steel Tractor Shoes—the economical answer to high track-replacement costs.

COUNTER-SUNK BOLT HOLES

Amsco Track Shoes have holes countersunk for less wear on bolts. Saves cost of replacing bolts when changing shoes.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS, JOLIETTE, QUEBEC

Imperial

the world's finest

TRACING CLOTH

In drafting rooms throughout the world Imperial quality is the standard by which fine tracing cloths are judged. This has been true for decades, and Imperial remains the finest tracing cloth because its makers have continued to improve its quality and value.

BUILT TO YOUR needs from standard parts

15-HP SPECIAL PURPOSE HOIST
single fixed drum, worm gear drive

Meet your hoisting needs *precisely* at lowest possible cost. Call on our long experience in modifying and re-combining standard parts to meet specialized hoisting requirements.

Write for bulletins and catalogs

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

Main Office and Works:
SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Dey St., N. Y. 7, N. Y.

PHOENIX BRIDGE COMPANY

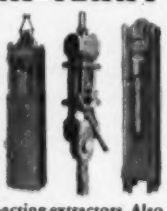
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

McKIERNAN-TERRY

WIDE-RANGE LINE OF
PILE HAMMERS AND EXTRACTORS



Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges and unloaders, and specially designed machinery.

McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

(Continued from page 84)

Charity of St. Vincent dePaul, 7301 St. Charles Rock Rd., St. Louis 14, Mo. CD 6/14, under LB.

† **Pittsburgh-Des Moines Steel Co.**, Neville Island, Pittsburgh 25, Pa., LB **$544,300**, five air receivers, Naval Ordnance Aerophysics Laboratory, NBy 1188, Spec. 1188/56, DAINGERFIELD, TEX. Officer in Charge of Constr., 8th Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. Bids June 21. CD 6/5.

John A. Lomax, 6428 Vanderbilt St., Houston, Tex. Purchase and Hire. **$368,115**, 30 DWELLINGS; **$379,000**, 33 DWELLINGS, HOUSTON, TEX. CD 5/16.

U. S. Constr. Corp., c/o Herman Zonana, 4302 Alconbury St., Houston, Tex. Own Forces. **$348,825**, 20 DWELLINGS; **$361,000**, 22 DWELLINGS, HOUSTON, TEX. CD 5/17.

J. C. May & Assocs., 1971½ Heights Blvd., Houston, Tex. Own Forces. **$381,500**, 37 DWELLINGS; **$363,330**, 30 DWELLINGS, ROCKPORT-FULTON, TEX. CD 5/16.

Husman Brothers, Sheridan, Wyo., LB **$495,000**. RESIDENCE and GUEST HOUSE, CODY, WYO. Mr. and Mrs. H. H. R. Coe, Cody, Wyo. Smith & Hegner, 1569 Grant St., Denver, Colo., archts.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Wash., Richland**—BA 7/19—Atomic Energy Comn., 703 Building, Richland, acid feed facilities at two water treatment plants in Hanford Works production area. CD 6/30/52, under Public Buildings.

† **Idaho, Waha**—COMMUNICATION BLDG.—BA 720—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., 1,240 sq. ft. masonry communication bldg., road, etc. for gap filler facility, ENG-45-108-56-210.

† **Wash., Anacortes**—COMMUNICATION BLDG.—BA 7/20—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 1,240 sq. ft. masonry communication bldg., road, etc. for gap filler facility, ENG-45-108-56-211.

HEAVY CONSTRUCTION—LB & CA

IDAHO—State Hy. Dpt., Boise,

Idaho—**Peter Kiewit & Sons Co.**, Idaho Falls, Idaho, LB **$691,395**, roadway, blt. surf. tr. 13.541 mi. State Hy. No. 25, maint. stockpiles, Jerome Co.;

Idaho—**J. O. Young & Sons**, Nampa, Idaho, LB **$157,855**, roadway, bit. surf. 40 ft. concrete bridge on 0.687 mi. State Hy. 25, Jerome Co. Bids June 19.

▲† **James Stewart Co.**, 411 N. Central Ave., Phoenix, Ariz., LB **$1,406,207** (3 bidders) addnl. facilities, hangar, fire and rescue bldg., ENG-04-353-56-119, FORT HUACHUCA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 27. CD 6/12.

† **Hoffman Constr. Co.**, 715 S.W. Columbia St., Portland, Ore., CA, **$343,800**, est. $353,800. (3 bidders) installing 9 acid storage tanks on concrete piers, 5 acid head tanks at water treatment works, RICHLAND, WASH. Atomic Energy Comn., 703 Building, Richland, Wash. Bids June 25. CD 6/1.

† **Olympian Dredging Co.**, 525 Market St., San Francisco, Calif., LB **$223,045**, est. $234,000. dredging mouth of American River and Sacramento River from Y St. Bend to Bryte Bend, Sacramento Co., CIVENG-04-167-56-169, CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids June 22.

† **Clyde W. Wood & Sons**, 6900 Tujunga Ave., North Hollywood, Calif., LB, **$243,700**, est. $290,964. (4 bidders) rock protection Los Angeles River Imprvt., Fletcher Dr. to Dayton Ave., Los Angeles Co., CIVENG-04-353-56-69, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 29. CD 6/15.

† **McGuire & Hester**, 796 66 Ave., Oakland, Calif., LB **$306,086**, (6 bidders) earthwork, concrete pipe lines and structures for laterals 5.3, 14.0, 36.6 and Y-2-6, Contra Costa canal distr. sys., Contra Costa Water Dist., DC-4700, Central Valley Proj., CALIFORNIA. Bureau Reclamation, Dpt. Interior, Winters, Calif. Bids June 21. CD 5/17.

BUILDINGS—LB & CA

▲ **Alfred Brown Co.**, Dooly Bldg., Salt Lake City, Utah, CA **$2,354,365**, general constr. Highland HIGH SCHOOL, SALT LAKE CITY, UTAH. Bd. Educ., 440 E. First South St., Salt Lake City, Utah. Bids May 29. CD 6/5, under LB.

† **S. M. Gilbert & Co.**, 7100 E. Marginal Way, Seattle 4, Wash., LB **$366,624**. central HEATING PLANT, INV. 56-205, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids June 25. CD 6/13.

† **Todd Building Co.**, P. O. Box 27, Roseburg, Ore., LB **$543,625** (1 bidder) KITCHEN-DINING HALL alterations, addns., Bldg. No. 1, Veterans Admin., Hospital, ROSEBURG, ORE. Veterans Admin. Munitions Bldg., Wash., D. C. Bids June 26. CD 4/25.

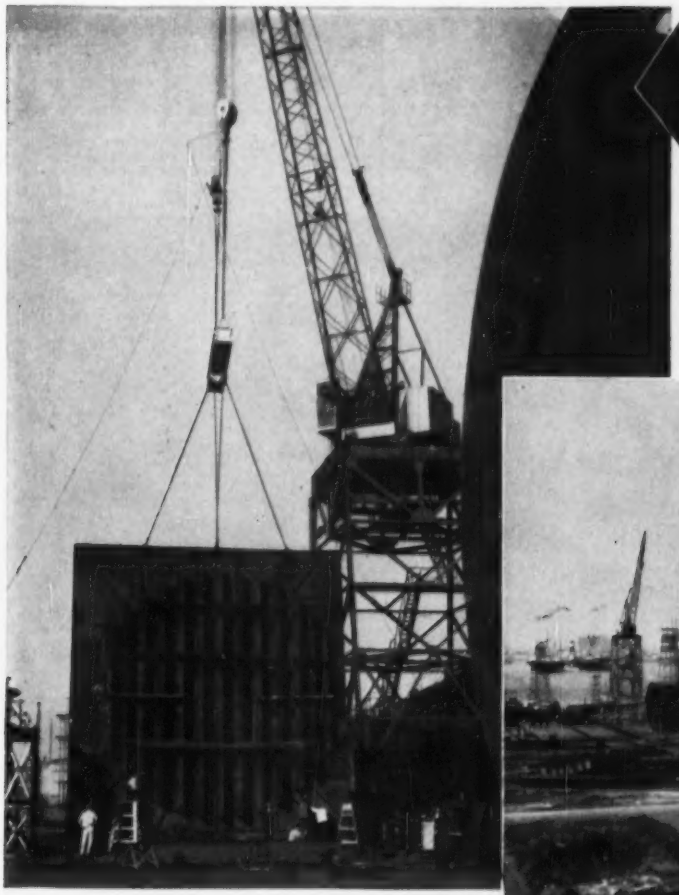
Vielsko & Post, Box 69, Salem, Ore., CA **$834,000**. replace 3 BUILDINGS, Fairview Home for Feebleminded, SALEM, ORE. State Bd. Control, Capitol, Salem, Ore. Bids June 1. CD 6/8, under LB.

Leon Slovin, 496 S. San Vicente Blvd., Los Angeles, Calif., LB **$504,134**. Grovecenter SCHOOL, Lark Ellen Ave. and Bedillo St., West Covina, COVINA, CALIF. Covina School Dist., 17850 E. Rowland Ave., Covina, Calif. H. L. Gogerty, 3123 W. 8 St., Los Angeles, Calif. archt. Bids June 18. CD 4/11/55.

Fitzgerald & Calloway, 532½ S. Citrus St., Covina, Calif., Owner Builds, **$469,000**. 39 frame, stucco DWELLINGS, Grovedale and Nubia Sts., etc., COVINA, CALIF.

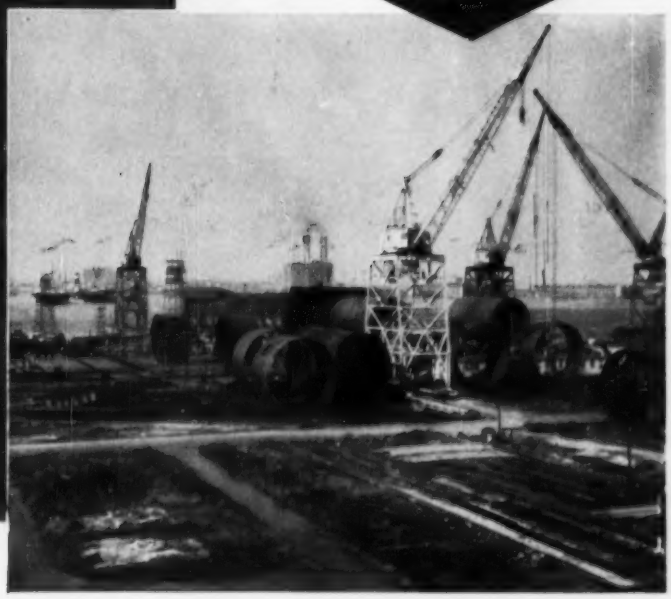
Queenside Land Co., Inc., 1124 S. Beverly Dr., Los Angeles, Calif., CA, **$795,400**. 82 frame, stucco DWELLINGS, on Clovermead St. and Kingside Dr.,

(Continued on page 88)



Clyde Whirley spots a water-tight bulkhead at one end of a 33 foot diameter tube section for the Baltimore Tunnel beneath the Patapsco River at Baltimore, Maryland. Perfect load control, provided by Whirley, assures fast, accurate and safe handling of all loads.

Four Clyde Whirleys in New York Shipbuilding's Camden, New Jersey yard, handle the various sections required for the twin tube tunnel as shown in the center background. Sections are launched and towed to fitting-out station at tunnel site.



New York Ship uses four Clyde Whirleys on unique, "assembly-line" tunnel project

Nine, huge, twin tunnel sections, built by New York Shipbuilding Corp. for Merritt-Chapman & Scott Corp. parent company of New York Ship and general contractor for the Baltimore Harbor tunnel project.

This assembly line process, developed by New York Ship, consists of 20 foot long sections, 33 feet in diameter, built and fabricated into 300 foot long sections. These are secured parallel to each other to provide twin tubes for vehicular traffic. Each twin tube section is fitted with water-tight bulkheads at both ends and ballasted with approximately 3000 tons of concrete placed in forms beneath the tubes to form a boat-like base. These sections are locked into position in a trench dredged across the bottom of the river; covered with backfill and then completed on the interior.

The many exclusive features of Clyde Whirleys, enables them to give the fatest, safest and most efficient service for handling any type of heavy cargo or materials.

For complete information, write for Bulletin 12.

HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • CAR PULLERS • UNLOADERS • ROLLERS

CLYDE

CLYDE IRON WORKS, INC.

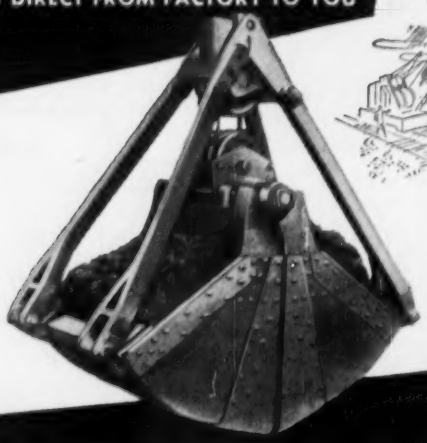
Established in 1899

DULUTH 1, MINNESOTA

A SUBSIDIARY OF BARIUM STEEL CORPORATION

BROWNHOIST BUILDS BETTER BUCKETS

—for less money DIRECT FROM FACTORY TO YOU



CLAMSHELL BUCKET

LOCOMOTIVE CRANE

COAL-ORE BRIDGE

ORE UNLOADER

191

ROPE REEVE, POWER WHEEL AND LINK TYPE

WRITE FOR ILLUSTRATED CATALOGUE

INDUSTRIAL BROWNHOIST CORPORATION

BAY CITY, MICHIGAN

Dig faster and cheaper in dry ground

MORETRENCH WELLPOINT SYSTEM

For Pumping Estimate, Call or Write

MORETRENCH CORPORATION

90 West St., New York 6, N. Y.

Chicago, Ill. Tampa, Fla. Houston, Tex.

Rockaway, N. J.

TEST BORINGS

for

- COAL
- MINERALS
- DAMS & BRIDGES
- BUILDINGS

We bore into the Earth

PENNSYLVANIA Drilling CO.

DRILLING CONTRACTORS AND MFRS.

PITTSBURGH 20, PA.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

• CAPACITY TO 600 TONS

FOR:

PILE TESTING • UNDER-PINNING • BRIDGES • PIPE PUSHING • SOIL TESTING

Write to Dept. N

RICHARD DUDGEON INC.

789 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

(Continued from page 86)

etc., COVINA, CALIF. Kingside Land Co., Inc., 1124 S. Beverly Dr., Los Angeles, Calif.

Wm. P. Neil, 2922 Sunol Dr., Los Angeles, Calif., CA, **$340,000**. 90,000 sq. ft. WAREHOUSE addn., EAST LOS ANGELES, CALIF. Certified Grocers, 2601 S. Eastern Ave., East Los Angeles, Calif.

D & E Corp., 8906 W. Olympic Blvd., Beverly Hills, Calif. Owner Builds. **$2,546,000**. 226 frame, stucco DWELLINGS, Tract 21870, MONTEREY PARK, CALIF.

Paul W. Speer, Inc., 3425 Cahuenga Blvd., Los Angeles, Calif. LB **$649,600**. Palmdale SCHOOL No. 4, PALMDALE, CALIF. Palmdale School Dist., Palmdale, Calif. Bids June 15. CD 6/5.

McDonald Bros., 2639 S. LaCienega St., Los Angeles, Calif., CA **$649,800**, 57 frame, stucco DWELLINGS, Culp St., Clintwood Ave., PUENTE, CALIF. Highland Village Five, Inc., 2639 S. LaCienega St., Los Angeles, Calif.

Arlington Building Co., 2116 S. Main St., Santa Ana, Calif. Owner Builds. **$360,000**. 30 frame, stucco DWELLINGS, Phoenix, Portala and Riverside Aves., RIVERSIDE, CALIF.

Blackpool Constr. Co., 5506 University Ave., San Diego, Calif. Owner Builds. **$955,900**, 95 frame, stucco DWELLINGS, Westridge Tract No. 3, SAN DIEGO, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

Que., Montreal—CONVEYOR GALLERIES—BA 7/19—National Harbor Bd., Parliament Bldgs., Ottawa, Ont. conveyor galleries on Laurier Pier, over $500,000. Plans deposit $100. C. D. Howe & Co. Ltd., 1421 Atwater Ave., engr.

Quebec—BA 7/24—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont., supplying, erecting of sector gates at Cote Ste. Catherine lock, Upper Beauharnois lock and Iroquois lock, Beauharnois. A. Gordon Murphy, c/o owner, 685 Cathcart St., Montreal, Que., ch. engr. CD 9/9/54.

Quebec—BA 7/24—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont., collector sewer and outfalls, municipalities of Montreal South, Jacques Cartier, St. Lambert and Preville. A. Gordon Murphy, 685 Cathcart St., Montreal, Que., ch. egnr. CD 9/9/54.

BUILDINGS—BA

Ont., Penetanguishene—HOSPITAL—BA 7/25—Ontario Dpt. P. Wks., Parliament Bldgs., Toronto, 150-bed hospital for criminally insane, over $500,000. CD 1/9.

HEAVY CONSTRUCTION—LB & CA

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto.

King Paving Co. Ltd., Oakville, Ont., CA, **$713,140**. Contract 56-54, grading, culverts 3 mi. cloverleaf on Queen Elizabeth Way at No. 25 Highway to north end of No. 2 Hwy., Hamilton. Awarded June 22. CD 6/28, under LB.

Hamilton Bridge Div., Bridge & Tank Co. of Canada Ltd., 231 Bay St. N., Hamilton, Ont., CA, **$810,000**. 2 rolling lift type bridges, one at Cote Ste. Catherine Lock in Lachine Section, other at Iroquois Lock in International Rapids Section, QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Awarded June 26. CD 6/26, under LB.

SASKATCHEWAN—Sask. Govt., Regina,

Beattie Ramsay Constr. Co. Ltd., Victoria and McDonald Sts., Regina, Sask., CA **$494,000**. bit. surf. 16.87 mi. Trans-Canada Hy. Valjean to Ernfold. Bids May 4. CD 4/20.

BUILDINGS—LB & CA

Cromar Constr. Ltd., 448 Colborne St., Brantford, Ont., CA. **$500,000**, 43,000 sq. ft. PLANT Globelands BRANTFORD, ONT. Gates Rubber Co. of Canada Ltd. 50 Iroquois St., Brantford, Ont. Awarded June 25. CD 5/14.

Mayfield Construction, Inc., 17 Church St. E., St. Martin, Que., Owner Builds, **$825,000**. 75-unit HOUSING DEVELOPMENT, ST. MARTIN, QUE.

ALASKA

HEAVY CONSTRUCTION—BA

▲† **Alaska**—TACAN FACILITIES—BA 7/24—U. S. Eng., Anchorage, Tacan facilities, incl. Navaid bldg. with equip. and generator rooms, mechanical installation, interior and exterior electrical distr., fuel oil storage and piping, access roads, area grading, mast piers and anchors, at Homer, Fort Yukon, Northway, Bettles and Bethel. Est. $1,500,000.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

† **Termac**, Madrid, Spain, LB **$445,663**. Group D facilities, Proj. ZAR-19, ZARGOZA, SPAIN. Bureau Yards & Docks Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., U.S.A. Bids June 20.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., San Antonio**—City Water Bd., 106 W. Market St., voted bonds June 12, 144 mi. water lines, $10,957,000; Olmos Basin water pump plant, $2,449,000; Canyon Dam reservoir, $1,500,000;

(Continued on page 91)

N. M. Newmark *and* C. P. Siess

engineers, educators, researchers

Dr. C. P. Siess (left) receiving the 1956 Concrete Reinforcing Steel Institute Award in behalf of Dr. N. M. Newmark and himself in recognition of their outstanding contributions in the field of reinforced concrete research. Professor H. J. Gilkey (right), Award Committee Chairman, is making the presentation at the 32nd Annual C.R.S.I. Meeting at the Greenbrier Hotel, White Sulphur Springs, West Virginia.

receive

1956 *Award*

of the

CONCRETE REINFORCING STEEL INSTITUTE

The 1956 Award of the Concrete Reinforcing Steel Institute was made in recognition of the joint activities of Dr. Newmark and Dr. Siess in the field of reinforced concrete research. Their work, in Talbot Laboratory at the University of Illinois, has ranged from extensive studies since 1936 of concrete floor slabs for bridges and buildings to recent research on the static and dynamic behavior of reinforced concrete beams and slabs.

The results of their research on highway bridge floors have had a significant effect on design practice, both in this country and as far away as Tasmania, Australia; Kenya, Africa; and the Fiji Islands.

N. M. Newmark holds the following degrees: B.S., Rutgers University, 1930; M.S., 1932, and Ph.D., 1934, University of Illinois. His honors include the ASCE J. James R. Croes Medal, 1945; ASCE Moisseiff Award, 1950; ACI Wason Medal for Most Meritorious Paper, 1949; Honorary Sc.D. Degree, Rutgers University, 1955. Dr. Newmark was awarded the President's Certificate of Merit in 1948.

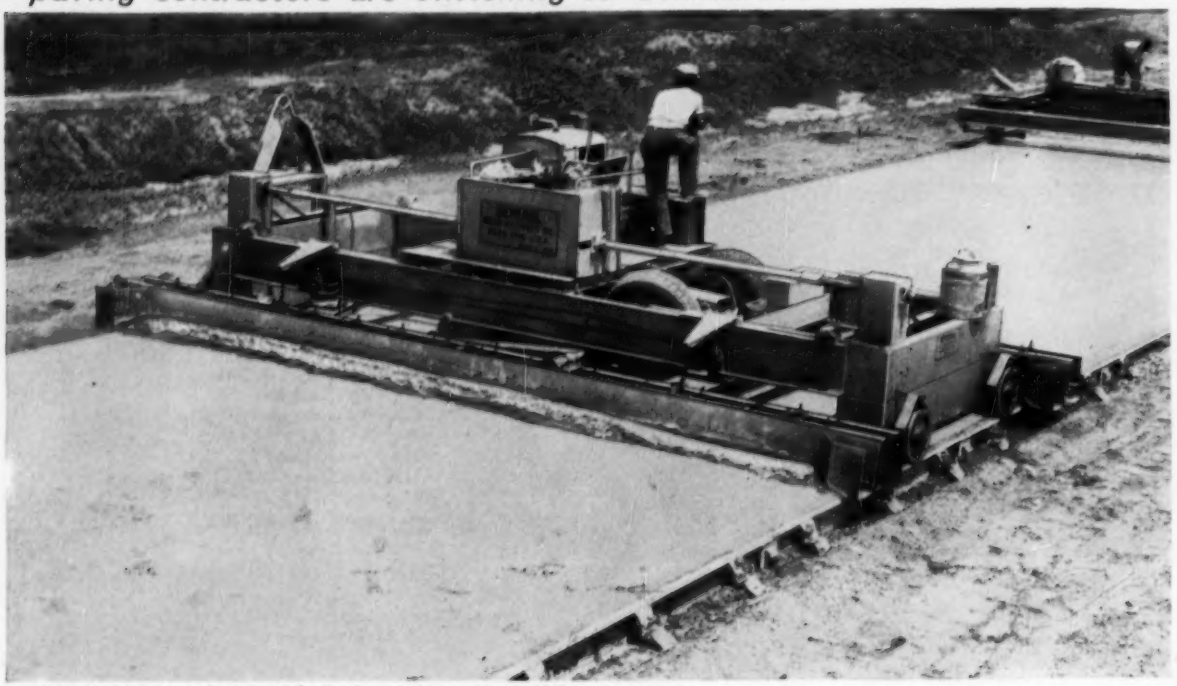
C. P. Siess holds the following degrees: B.S., Louisiana State University, 1936; M.S., University of Illinois, 1939; Ph.D., University of Illinois, 1948. His honors: ACI Wason Medal for Most Meritorious Paper, 1949.

The C.R.S.I. Award is administered by representatives of the American Concrete Institute, Associated General Contractors of America, and American Society of Civil Engineers. The members of the 1956 Award Committee are: Chairman—Professor H. J. Gilkey, Head of Department of Theoretical and Applied Mechanics, Iowa State College, Ames, Iowa, representing American Society of Civil Engineers; Vernon P. Jensen, Manager of Development, C. F. Braun & Co., Alhambra, Calif., representing American Concrete Institute; and Earl J. Wheeler, President, Frank Messer & Sons, Inc., Cincinnati, Ohio, representing Associated General Contractors.

CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn Street, Chicago 3, Illinois

paving contractors are switching to General...



GRM Model 5-S standard 20-25 ft. Finisher working on Rt. M-60 by-pass.

GENERAL FINISHER

speeds paving production for Garavaglia and Pierson!

Typical of leading contractors now using General Road Machines paving equipment is Garavaglia & Pierson, Centerline, Michigan.

On their 8 mile by-pass job along Rt. M-60 at Niles, Michigan, they are using 2 GRM Model 5-S Finishers, 1 standard 20-25 ft., 1 self-widening 10 to 16 ft. and a GRM Automatic Curing Machine.

Paving Superintendent Dave Stein says, "Our GRM equipment has performed well in all respects. We feel that the simple, rugged construction of each machine will pay off in longer life and less maintenance. The wide screeds on the finishers do an excellent job of controlling surge behind the screeds."

Users report that the General Finisher produces better results in less time. Its range of 6 travel speeds and 24 screed speed combinations permits selection of the finishing rate exactly suited to individual paving job requirements.

What's more, the Finisher's rigid structural steel frame, V-belt transmission drive and anti-friction bearing construction provide smooth operation, eliminate form-damaging rocking and twisting.

These and many other features will assure increased production, lower costs and extra profits on your jobs! Ask your General Road Machines distributor for more information about this advanced design Finisher, available in widths up to 32 ft. It's a part of General's complete line of modern paving equipment.

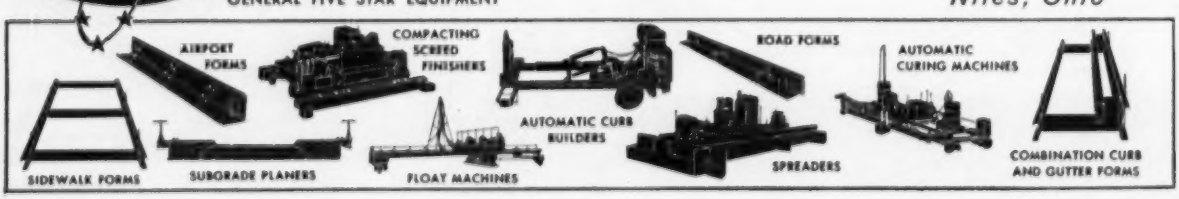
AA-3704

GRM

GENERAL ROAD MACHINES, INC.

GENERAL FIVE STAR EQUIPMENT

Niles, Ohio



(Continued from page 88)

modernize Artesia pumping station, $788,800; new water pumping station, 34 St., $782,200; modernize four water pressure regulating tanks, $197,000; Pressure Water Regulating Tank No. 1, $150,000; Pressure Water Regulating Tank No. 2, $145,000; rehabilitate small water pump stations, $169,000; modernize Mission Pumping Station, $686,500; modernize Old Market St. Pumping Station, $500,000; misc. imprvs. and extens. to water sys. $2,530,500. CD 5/17.

▲ **Ont., Ottawa**—City, City Hall, new filtration plant at west end of city, 42,000,000 cap., from intake in deep water channel in Ottawa River $5,000,000; extending 48 in. feeder main from Scott and McRae Sts. to new filtration plant, $1,300,000. W. E. MacDonald, c/o owner, consult. engr. CD 8/24/49.

SEWERS, WASTE DISPOSAL

▲ **O., Ashtabula**—Comrs. Ashtabula Co., Court House, bond election Nov. 6, sanitary sewers. $1,000,000.

▲ **O., Avon Lake**—Village, Town Hall, interceptor sanitary sewer. $3,000,000. C. E. Pettis, 518 Jefferson St., Toledo, O., and John Cunning & Assoc., Mansfield, engrs., have each submitted plans. CD 3/12/54.

▲ **Pa., Slatington**—Boro, sewage disposal plant and sanitary sewer collection sys. $1,900,000.

▲ **Wash., Bellevue**—Bellevue Sewer Dist., Bellevue, sewerage sys. to serve east side of Lake Washington with trunk lines and treatment plant, $2,500,000. R. W. Beck & Assocs., Tower Bldg., Seattle, Zone 1, consult. engrs. Bids next year. CD 12/14.

▲ **Ont., North Bay** — Ontario Water Resources Comn., 67 College St., Toronto, sewage disposal plant and sewerage sys. for city and 2 adjoining twps. $1,000,000.

▲ **Ont., Sault Ste. Marie**—Ontario Water Resources Comn., 67 College St., Toronto, sewage disposal plant St. Mary's River waterfront location in Rankin Subdivision, $3,500,000.

BRIDGES

▲ **Calif., Modesto**—Stanislaus Co., Court House, defeated bonds June 5, new bridges, roads, rehabilitation of existing ones. $5,000,000. CD 3/2.

▲ **Ill., Chicago**—Chicago Park Dist., 425 E. 14 St., Chicago, Zone 3, Outer Dr. grade separations at Michigan, Ohio, Grand, Randolph, Monroe, Jackson and Balboa Dr., incl. Wacker Dr. Viaduct exten. from Michigan Ave. to Outer Dr. $15,000,000. Ralph H. Burke, 20 N. Wacker Dr., Chicago, Zone 6, consult. engr.

▲ **INDIANA AND KENTUCKY**—Indiana Toll Bridge Comn., 209 W. Washington St., Indianapolis, Ind. **Floyd Co., Ind. and Jefferson Co., Ky.**—bridge over Ohio River between Louisville, Ky. and New Albany, Ind. $10,000,000. Hazlett & Erdal Commerce Bldg., Louisville 1, Ky., consult. engrs. CD 4/10/52, under Kentucky & Indiana.

▲ **O., Cleveland**—City, City Hall, Zone 14, bond election Nov. 6, constr. and reconstr. in whole or part bridges on streets and highways within city of Cleveland. $5,000,000. CD 11/5/54.

▲ **O., Youngstown**—City, City Hall, 500 ft. bridge over Mill Creek, at Warren Ave. $1,000,000. James C. Ryan, city engr.

▲ **Que., Montreal**—National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont., bridges and approaches between Island of Montreal and south shore of St. Lawrence River, $30,000,000. Dr. P. L. Pratley, 1117 St. Catherine St., N., consult. engr.

STREETS AND ROADS

▲ **Ill., Belleville**—City, Mayor H. V. Calhoun, City Hall, street modernization program. $1,000,000. CD 12/13.

EARTHWORK, WATERWAYS

▲† **Colorado**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., 360 ft. high Wagon Wheel Gap dam with 500,000 acre ft. reservoir, St. Luis Proj. near Creede on Rio Grande River, Southern Colorado, $22,571,000. No appropriation. Reclamation has made engineering and economic feasibility report. Project authorized. CD 9/19/44.

▲ **Texas-Red River Valley Assn.**, Paris, new lake on Sanders Creek, north of Paris, as new water supply source for City of Paris; dam would impound 195,000 acre ft. water, 40-mi. shoreline, cover 6,500 acres. $2,000,000.

▲ **Alberta**—Calgary Power Ltd., 140 1st Ave. W., Calgary, power dam, North Saskatchewan River, Nordegg. $40,000,000. CD 9/21/54.

▲ **New Brunswick**—GENERATING UNIT—New Brunswick Electric Power Comn., 527 King St., St. John, addnl. three generating units at Beechwood Lake Generating Plant, Edmundton, $3,000,000. CD 4/23/54.

PUERTO RICO

▲ **Puerto Rico, Ponce**—PLANT—Union Carbide Caribe, Inc. (Union Carbide & Carbon Corp.), 30 E. 42 St., New York 17, N. Y. ethylene glycol plant, near here. $28,500,000.

DRIVE-IT® 330

CARTRIDGE-POWERED STUD DRIVER

SAVES TO 80% FASTENING TO CONCRETE OR STEEL

Construction and maintenance men, nationwide, are cutting costs with DRIVE-IT powder-actuated tools. Does 15 minutes work in 15 seconds. Users report time and money savings up to 80% over drilling and other outmoded methods. Electrical, heating and ventilating, plastering, general construction—wherever anything must be fastened to concrete or steel, DRIVE-IT tools are money-makers for their users.

Exclusive DRIVE-IT Advantages

1. **ONE POWER LOAD.** Only one strength power load needed — whether concrete is soft or hard. No need to buy several strength loads.

2. **LIGHTWEIGHT and EASY-OPERATING.** The DRIVE-IT 330 weighs less than 6 pounds, is only 13 inches long. One motion opens or closes breech. Automatic cartridge ejection. Trigger-operated.

3. **SAFE.** Large safety pad plus built-in safety mechanisms protects operator. Tool must be depressed against work surface before trigger can be pressed. Can't be fired accidentally.

4. **VERSATILE.** Standard ¼-inch barrel can be replaced easily with ⅜-inch barrel for driving larger studs. Uses same low-cost power loads. Over 50 types and sizes of drivepins available.

***DRIVE-IT* Dealers Are Fastening Experts Who Give on the Job Service**

SEE YOUR DEALER OR MAIL COUPON FOR A DEMONSTRATION

OMARK INDUSTRIES
5001 S. E. Johnson Creek Blvd.
Portland 6, Oregon

☐ Send literature on DRIVE-IT tools.
☐ I want a free DRIVE-IT demonstration.

Name_____

Address_____

City_____ State_____

©Copyright 1956 by Powder Power Tool Co., Portland 6, Oregon

In San Francisco Grades up to 18 percent proved how

SOAPSTONE OCT-O-DUCT

TAKES TO THE HILLS

Eight new duct ways for telephone cables drop like penstocks down rock-ribbed Nob Hill in the heart of San Francisco.

Constant street traffic, numerous existing underground sewer, water and gas services and the need for a deep, narrow trench dictated the choice of Soapstone OCT-O-DUCT for this recent 4-block project.

Soapstone OCT-O-DUCT was selected, because of its easy-to-handle 4-foot lengths, its flat sides which allowed tiering with no spacers, its flexibility made possible by simple couplings, and its trench-side delivery.

Preferred for 30 years by Western construction men, OCT-O-DUCT gives you speed, economy and unmatched flexibility.

Write for NEW illustrated catalog 56-A to get the full story. For more about the Nob Hill job, ask for Bulletin 102.

SOAPSTONE DUCT COMPANY

3985 Beach Street

Oakland 8, California

LATIN AMERICA

▲ **Mexico, Ensenada**—CEMENT WORKS—Gen. J. de Jesus Clark Flores, Ensenada, N.B.C. cement works, $3,000,000.

PUBLIC BUILDINGS

▲ **Calif., Clovis**—SCHOOLS—Jefferson Union Elementary School Dist., 5013 N. Fowler Ave., defeated bonds May 25, schools addns. $1,200,000. CD 4/20.

▲ **Calif., Riverside** — SCHOOL — Riverside City School Dist., Administration Bldg., 3954 12 St., voted $1,770,000 bonds May 22, elementary school.

▲ **Calif., Riverside**—SCHOOL—Riverside City High School Dist., Administration Bldg. 3954 12 St., voted $5,350,000 bonds May 22, high school.

▲ **Calif., San Francisco**—HALL OF JUSTICE—City and San Francisco Co., P. Utilities Comn., City Hall, plans by Weihe, Frick & Kruse, 414 Mason St., Hall of Justice. $15,475,000. Bonds recently voted. CD 11/14.

▲ **Conn., Darien**—HIGH SCHOOL—Town, High School Bldg. Comn., Town Hall, plans by Ketchum, Gina & Sharp, 227 E. 44 St., New York, N. Y., 140,000 sq. ft. high school, between Middlesex Rd., Hollow Tree Ridge Rd. and Hanson Rd. $2,000,000. Severud-Elstad-Kruger-Syska & Hennessy, 144 E. 39 St., New York, N. Y., consult. engrs. CD 1/24.

▲ **Conn., Greenwich**—SCHOOL—Town, Bd. Educ., Greenwich, plans by Sherwoood, Mills & Smith, 65 Broad St., Stamford, Central Junior High School $2,000,000. Wood & Sibbert, First Natl. Bank Bldg., Greenwich, consult. engrs. CD 3/9.

▲ **Conn., Hamden**—SCHOOL—Town, Bd. Educ., 2040 Dixwell Ave., plans by Warren H. Ashley, 967 Farmington Ave., West Hartford, Junior High School, Washington Ave. $2,600,000. CD 2/13.

▲ **Fla., Key West**—GENERATING PLANT—Utility Bd., City, City Hall, 16,500 kw. steam generating plant addn. $2,970,000. Bids about Oct. 15. R. W. Beck & Assocs., P. O. Box 471, Columbus, Neb., consult. engrs.

▲ **Ind., Indianapolis** — CITY-COUNTY — Indianapolis-Marion County Bldg. Auth., Henry W. Manz, genl. mgr., Illinois Bldg. plans by Allied Architects & Engineers of Indianapolis, Inc., 644 E. 38 St., city-county bldg. $15,000,000. Construction to start in fall 1957. CD 3/12/53.

▲ **Kan., Newton**—SCHOOL—Bd. Educ. plans by Schmidt-McVay & Peddie, 1832 E. 2 St., Wichita, school imprvs. $1,250,000.

▲ **Md., Jessup**—BUILDING—State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, plans by Hopkin, Pfeiffer & Fenhagen, 10 E. Mulberry St., Baltimore, Zone 2, concrete, steel, masonry bldg. for cirminally insane, $1,200,000. Jas. R. Posey & Assoc., 1019 N. Calvert St., Baltimore, Zone 2, mech. engrs., V.R.P. Saxe, 1701 St. Paul St., Baltimore, Zone 2, struct. engr.

▲ **Mass., Fitchburg**—DORMITORY—State, Dpt. Educ., 200 Newbury St., Boston, plans by W. Chester Browne & Assoc., Inc., 184 Boylston St., Boston, E-403, men's dormitory, State Teachers College, $1,300,000. CD 2/26/52.

▲ **Mo., Ladue (St. Louis 24 P.O.)**—HEADQUARTERS—St. Louis County Library, Mahlon B. Wallace, Jr., pres. of Bd., 6814 Natural Bridge Rd., Normandy, Zone 21, plans by Kenneth E. Wischmeyer, 911 Locust St., St. Louis, Zone 1, headquarters and central library, on 8 acre tract and near intersection of Clayton Rd. and Lindbergh Blvd. $1,000,000. CD 6/25.

▲ **N. J., Clifton**—SCHOOL—City, Bd. Educ., high school Richfield Sect., $2,000,000; Senior High School of Park Slope, $2,500,000.

▲ **N. J., Saddle Brook**—SCHOOL—Bd. Educ., Boro of Saddle Brook, Boro Hall, plans by Ira H. Davey, 8 Depot Square, South Englewood, high school south of S. Lefwing Ave., Rochelle Park sect., $1,150,000.

▲ **N. J., Scotch Plains**—SCHOOL—Bd. Educ., Scotch Plains, plans by Micklewright & Mountford, E. Stuyvesant Ave., Trenton, elementary school. $1,500,000.

▲ **N. Y., Chatham**—SCHOOL—Town, School Dpt., plans by John H. Fisher, 29 Wendell Ave., Pittsfield, Mass., central school, $1,000,000. Bids in Fall.

▲ **N. Y., Freeport**—APARTMENTS—Freeport Housing Auth., Village Hall, group 3 story apartments, E. Merrick Rd., Buffalo and Albany Aves., $1,500,000. CD 1/11/46.

▲ **O., Columbus**—SCHOOLS—Bd. Educ., 270 E. State St., bond election Sept. 14, school addns., imprvs. $12,900,000. CD 11/6/53.

▲ **O., Columbus**—HOSPITAL EXPANSION, etc.—Comrs. Franklin Co., Court House, bond election Sept. 14, money to be allocated to various units of Columbia Hospital Federation for necessary expansion and imprvs. $15,000,000.

▲ **O., Sidney**—HIGH SCHOOL—Bd. Educ., Sidney, bond election Nov. 6, high school, west of Shelby Co. Fairgrounds. $2,000,000. CD 11/9/54.

▲ **O., Washington Court House**—HIGH SCHOOL—Bd. Educ., Miami Trace School Dist., Washington Court House, bond election Nov. 6, high school, corner Rte. 70 and Bloomingburg-New Holland Pike. $1,652,500. CD 3/1/54.

▲ **O., Youngstown**—SCHOOLS—Bd. Educ., bond election Nov. 6, schools. $5,460,000. CD 5/15/47.

▲ **S. D., Sioux Falls**—AUDITORIUM—City, defeated $2,500,000 bonds June 12, auditorium-arena. CD 5/18.

▲ **Wash., Bothell**—SCHOOLS—School Bd., Bothell, Inglewood elementary school $511,243; Tartarian elementary school $511,243.

▲ **Ont., Brockville**—HOSPITAL EXPANSION—Brockville General Hospital, Brockville, plans by Drever & Smith, 81 Brock St., Kingston, hospital expansion, $1,275,000.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—Birmingham Baptist Hospital, 708 Tuscaloosa Ave., plans by Charles McCauley, Jackson Bldg., 315-bed Highland Baptist Hospital, $1,750,000. CD 5/1/51.

▲ **Conn., Milford**—SHOPPING CENTER—Lazarus Hyman, Woodmont, Plaza Shopping Center, 10-acre parking area, $2,750,000.

▲ **Conn., New Haven**—UNIVERSITY ADDNS.—Yale University, 105 Wall St., New Haven, enlarging Peabody Museum, $6,280,000; Sterling Library addn., $5,500,000; Yale Law School bldgs., $11,000,000; new residential college, $1,000,000; new residential college, $1,000,000; new residential college, $1,000,000. CD 6/13/50.

▲ **Conn., Stamford**—AMUSEMENT, etc.—George Zuckerman, 308 8 Ave., Asbury Park, N. J., plans by Norman Bel Geddes, 51 E. 54 St., New York, N. Y., commercial amusement and recreation project, Cove Island, $1,000,000.

▲ **Conn., West Hartford**—SHOPPING CENTER—Five-City Plaza, c/o Frederick V. Conrad, Jr., 15 Lewis St., Hartford, 2 story, 332,000 sq. ft. shopping center etc., 31-acre site, Corbin's Corner. $7,000,000.

▲ **Ill., Chicago**—MOTEL—The Breakers, Inc., c/o M. L. Anixter, 79 W. Monroe St., plans by Frank J. Lapasso, 8 S. Dearborn St., 250 unit motel, 49 St. and Chicago Beach Dr. $3,000,000.

▲ **Ill., Chicago**—MOTEL—Dunes Calumet Expressway, Inc., 79 W. Monroe St., plans by Frank J. Lapasso, 8 S. Dearborn St., 109-unit motel, Stony Island, 94 and 95 Sts., $1,500,000.

▲ **Ill., Chicago**—APARTMENT—Southern Realty Co., c/o Geo. S. Lurie, 120 S. La Salle St., Zone 3, plans by Milton M. Schwartz, 2709 W. Rooseveit Rd., 37 story, 450-unit apartment, 65 E. Wacker Dr. $6,000,000.

▲ **Ind., Hammond**—HOMES—Lake Shore Realty Corp., 1000 14 St., Whiting, 130 homes, 173 and Grand Sts., $1,850,000.

▲ **La., Lake Charles**—OFFICE—Henry C. Beck Co., First National Bank Bldg., Dallas, Tex., and N. O. Thomas Jr., developer, Washington Youree Hotel, Shreveport, 12 story, 50x185 ft., 108,000 sq. ft. office on Pujo and Bilbo Sts., adjoining will be a 4 story parking bldg., $3,500,000. To be completed in 1957.

▲ **Md., Baltimore**—APARTMENT—Mullan Contg. Co., 3949 Greenmount Ave., Zone 18, plans by Richard Hawley Cutting, 2074 E. 36 St., Cleveland, O., three 8 story, masonry, concrete, steel swank type apartment bldgs., air-conditioned, Robt. Garrett Estate, Charles St. Ave., 20 acre site, underground parking facilities. $5,000,000.

▲ **Mass., Hyde Park**—SHOPPING CENTER—Corkin Enterprises, Herbert I. Corkin, pres., 1 North Main St., Randolph, plans by Winebaum & Stern, 68 Devonshire St., Boston, shopping center between Truman Hy. and Neponset River, $2,000,000.

▲ **Mich., Detroit**—HOSPITAL—Rehabilitation Institute of Greater Detroit, Dr. Robert C. Dean, dir., Hamilton and Taylor Sts., 5 story Medical Center Hospital unit, Brady St. near Brush St. $2,785,000.

▲ **N. H., Newington**—SHOPPING CENTER—Michael Dadeau, c/o Willis E. Littlefield, archt., 339 Central Ave., Dover, Tri State Shopping Center, Woodbury Ave. $1,000,000.

▲ **N. Y., Hamburg**—HOMES—F. J. Eberhardt, Inc., Hamburg, 128 homes subdivision on 37 acre tract near Rte. 5 and Old Lakeshore Rd. $2,000,000.

▲ **N. Y., North Tonawanda**—HOMES—Pearce & Pearce, 3400 Main St., Buffalo, 1,100 homes on 300 acre tract. $20,000,000. Constr. in the Summer of 1957.

▲ **O., Cincinnati**—BOWLING ALLEY, etc.—Rudy Reinhold, 5861 Cleves Warsaw Pike, plans by Leslie Moss, 1210 Drott Ave., 36-lane bowling alley, restaurant, Section Rd. and Reihold Dr. $1,000,000. Group headed by Gilbert Koshover, 6206 Joyce Lane, lessee. Bids in Fall.

▲ **O., Stow**—HOMES—Dubetz Constr. Co., Stow, 85 to 100 homes in area between Bryn Mawr Dr. and E. Stow Rd., roads, and sewers. $1,000,000.

▲ **Okla., Oklahoma City**—HOTEL—Skirvin Hotel Co., 1 and Broadway, plans by Sorey, Hill & Sorey, 809 N.W. 36 St., hotel addn., Park and Broadway. $1,000,000. CD 5/8/53.

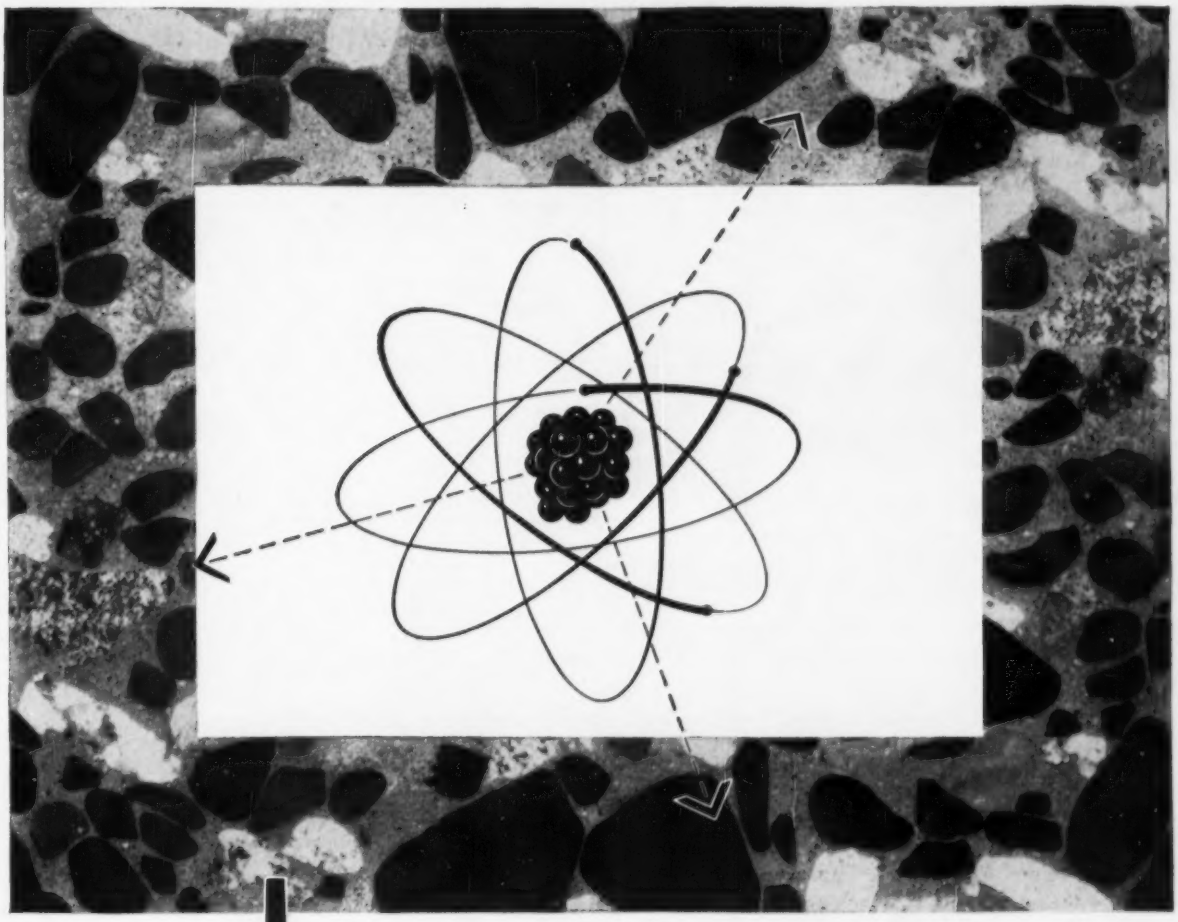
▲ **Pa., Harrisburg**—EDUCATIONAL—Harrisburg Hospital, Front and Mulberry Sts., 10 story, educational bldg. with dormitory and nurses' school; convert present nurses' home into hospital facility; constr. 3 story annex, $2,400,000.

▲ **Wis., West Allis**—OFFICE—Allis-Chalmers Mfg. Co., 1126 S. 70 St., 7 story, 60x180 ft., concrete, steel, brick office. $1,500,000.

▲ **Ont., Toronto**—SUBDIVISION DEVELOPMENT—Cachet Country Club, c/o R. Pearson Realty, Ltd., Unionville, subdivision development, incl. clubhouse, swimming pool, equine boarding stable, private airfield, etc., 300-acre estate, Don Mills Rd., north of Hy. 7. $3,000,000. Dr. Alfred P. Bernhart, 19 Langdon St., consult. engr.

▲ **Que., Montreal**—TOURIST CENTRE—Bonavia Enterprise, Inc., c/o George Proulx, 2010 Henri Bourasse Blvd., plans by Felix Racicot, R.R. No. 4, Sorel, tourist centre, 10 bldgs., to incl. tourist palace, 100-room motel, office bldgs., shopping centre, theatre, convention hall, restaurant, cinema, swimming

(Continued on page 94)



"heavy" concrete for reactor shields

High-density concrete, an efficient and practical radiation shielding material, is destined for wide use in nuclear reactors.

The high density results from the use of heavyweight aggregates and affords 1½ to 2 times more radiation protection than normal weight concrete of equal thickness. Its higher unit cost is offset by overall cost savings, which on one project amounted to $7,000,000!

INTRUSION-PREPAKT materials and methods are a proved solution for placing high-density concrete in massive, complex shields having a maze of obstructions. High-density aggregates are carefully preplaced to assure uniform density without segregation. Consolidation with INTRUSION mortar produces a PREPAKT concrete structure free of radiation leaks. Densities to 300 lbs./cu. ft. and over can be achieved, usually at less cost than by conventional methods.

INTRUSION-PREPAKT experience in placing high-density concrete reactor shields qualifies it as the top organization to work with on such projects. You will deal with a firm that *specializes* in concrete construction and maintenance, *has* a complete field construction group and *offers* an engineering design service. For information, write: INTRUSION-PREPAKT, Inc., Room 779-O, Union Commerce Bldg., Cleveland 14, Ohio. In Canada: INTRUSION-PREPAKT, Ltd., 159 Bay St., Toronto, Ontario.

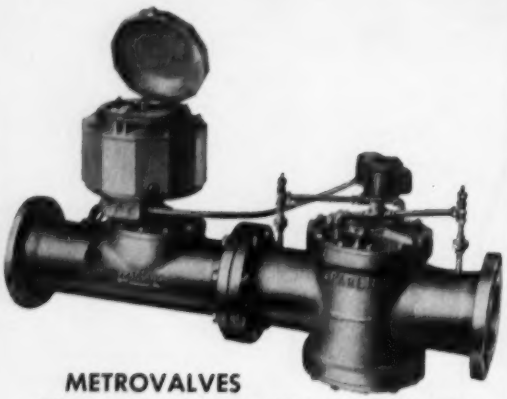
A new technical bulletin on "High-Density PREPAKT Concrete" is now in preparation. We will be glad to send you a copy. Send a request on your letterhead, please.

INTRUSION-PREPAKT, INC.

OFFICES IN PRINCIPAL U. S. AND FOREIGN CITIES

Intrusion and Prepakt are trade marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655004, 2434302 and others, also patents pending.

flow information at your finger tip!



- MAIN-LINE METERS
- FLOW and CHEMICAL FEED CONTROLS
- INSTRUMENTS

METROVALVES

AUTOMATIC FLOW REGULATION—TOTAL FLOW REGISTRATION

Select the required flow by simply setting a pointer to the desired dial position. Total flow is easily read on the counter type clock. Ideal for either remote telemeter applications or on the spot control.

Contact any Sparling Office for complete information.

SPARLING METER COMPANY
Incorporated
225 NORTH TEMPLE CITY BLVD., EL MONTE, CALIF.

ATLANTA 3.....66 Luckie Street NW
BOSTON 8.....6 Beacon Street
CHICAGO 8.....1500 South Western Ave.
CINCINNATI 2.....626 Broadway
DALLAS 1.....505 No. Ervay St.
KANSAS CITY 6, MO.....6 E. Eleventh St.
945 North Main St.....LOS ANGELES
650 First Avenue West.....ROSELLE, N. J.
85 Industrial St.....SAN FRANCISCO 24
1932 First Avenue.....SEATTLE 1
207 Queens Quay West.....TORONTO, CAN.
248 London Rd.....ROMFORD, ENGLAND

IF IT'S A

WET JOB

PLAY SAFE! ASK FOR A DEWATERING ANALYSIS BY

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED

Shops: Eddystone, Pa.—Philadelphia, Pa. Royersford, Pa.

22nd St. & Washington Ave. Philadelphia 46, Pa. Main Office

AISC

New York Office 44 Whitehall St., N. Y. 4, N. Y.

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air

We have the equipment, personnel and experience to complete any and all GUNITE work regardless of size or location.

Send for specifications and bulletins

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 WEST WALNUT, CHICAGO 12, ILLINOIS
3206 HOUSTON, HOUSTON 9, TEXAS
3545 LINDELL BLVD., ST. LOUIS 3, MO.
Milwaukee and Twin Cities—Denver—New Orleans

(Continued from page 92)

pool, gasoline station, 15557 Sherbrooke St. E. (Pointe Aux Trembles). $7,000,000.

INDUSTRIAL BUILDINGS

▲ Calif., San Leandro—PLANT—Yale & Towne Mfg. Co., 405 Lexington Ave., New York, N. Y. mfg. plant, near here. $2,000,000.

▲ Fla., Tampa—TINNING MILL—American Can Co., 100 Park Ave., New York, N. Y., tinning mill. $7,000,000.

▲ Idaho, Boise—TANKAGE—Standard Oil Co. of California, 225 Bush St., San Francisco, Calif., addnl. tankage at terminus of Salt Lake-Boise pipe line, $1,000,000. Work to start this summer.

▲ Ind., Gary—TINNING MILL—American Can Co., 100 Park Ave., New York, N. Y., 200,000 sq. ft. tinning mill on 25-acres, Bridge St. adjacent to Gary Steel mills, $7,000,000.

▲ Mass., Holyoke—MANUFACTURING—Holyoke Water Power Co., 1 Canal St., Holyoke, 2 story, 150x300 ft. Masonry, steel mfg. bldg. $1,000,000, E. M. Sullivan, 784 Bay St., Springfield, consult. engr. American Pad & Paper Co., 88 Winter St., Holyoke, lessee.

▲ N. M., Scholle—PLANT—Permanente Cement Co., 1924 Broadway, Oakland, Calif., 1,400,000 bbl. per year cement plant. $5,000,000. Kaiser Engineers, Div. Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif., consult. engrs.

▲ N. Y., Greenburgh—RESEARCH LABORATORY, etc.—Union Carbide & Carbon Corp., 30 E. 42 St., New York, Zone 17, 2 and 3 story office, basic research laboratory, service laboratory, utilities bldg. and cafeteria, near here. $2,000,000. Work to start in 1957. CD 7/9/52, under Commercial Buildings.

▲ O., Ashtabula—FACTORY—Inland Container Corp., 700 W. Morris St., Indianapolis 6, Ind. 128,000 sq. ft. brick factory to m'f. corrugated shipping containers, W. 47 St. $1,000,000.

▲ O., Painesville—PLANT—Morton Salt Co., 40 Worth St., New York, N. Y., salt plant in Painesville Twp., approx. ½ mi. from mouth of Grand River. $2,000,000.

▲ Alta., Edmonton—PLANT—Standard Iron & Engineering Works Ltd., 107 Ave. and 120 St., plans by Dominion Bridge Co. Ltd., Lachine, Que., new fabrication plant, 78-acres near south city limit. $1,500,000. CD 6/22.

▲ B. C., Vancouver—WIRE and CABLE PLANT—Phillips Electrical Co. Ltd., Brockville, Ont., wire and cable plant in South Vancouver. $1,250,000.

▲ Ont., Sarnia—ETHYLENE PLANT—Imperial Oil Co., Ltd., 56 Church St., Toronto, ethylene plant, Hy. 40 south of city. $10,000,000-$12,000,000.

▲ Ont., Timmins—ORE TREATMENT PLANT—Quebec Metallurgical Industries Ltd., 25 King St. W., Toronto, ore treatment plant, Gillies Lake, near here. Over $1,000,000.

▲ Ont., Toronto—PLANT—Superior Tool & Die Co. of Detroit, Mich., c/o David Rush, Daytona Investments Ltd., 100 Adelaide St. W., 100,000 sq. ft. plant. $4,000,000.

▲ Sask., Prince Albert—MILL—Washkesiu Forest Products Ltd., c/o Sask. Govt., Regina, sulphite pulp mill 10 mi. northeast of here. $60,000,000. C. D. Schultz & Co. Ltd., 325 Howe St., Vancouver, consult. engrs. Stadler, Hurter & Co. Ltd., Drummond Bldg., Montreal, assoc. consult. engrs.

UNCLASSIFIED

▲ Idaho, Arco—EXPERIMENTAL LOOPS—Atomic Energy Comn., Idaho Operations Office, Idaho Falls, experimental loops to be built into Engineering Test Reactor for tests of interest to aircraft nuclear propulsion program. $3,000,000. Kaiser Engineers, Kaiser Bldg., Oakland, Calif., consult. engrs. CD 3/24/49, under Public Buildings.

▲ Ill., Skokie—PARKS, ETC.—Skokie Park & Recreation Dpt., 3701 Oakton St., plans by Howard T. Fisher & Assoc., 322 W. Washington St., Chicago, 16 parks, community center bldg., bath house and filter bldg. bounded by Greenwood, Lowell, Grove and Kilbourn Aves., $1,695,000. McFarlzean Everly & Assoc., 874 Greey Bay Rd., Winnetka, consult. engrs. CD 4/20/55.

▲ Mass., Boston—UTILITIES—City, Hospital Dpt., 818 Harrison Ave., modernization water supply sys., $223,000; sewerage sys., $215,000; electric services, $305,800; conversion electric sys. from DC to AC, $520,000, all at Long Island Hospital, Jackson & Moreland, Park Square Bldg., consult. engrs. CD 9/16/53, under Public Buildings.

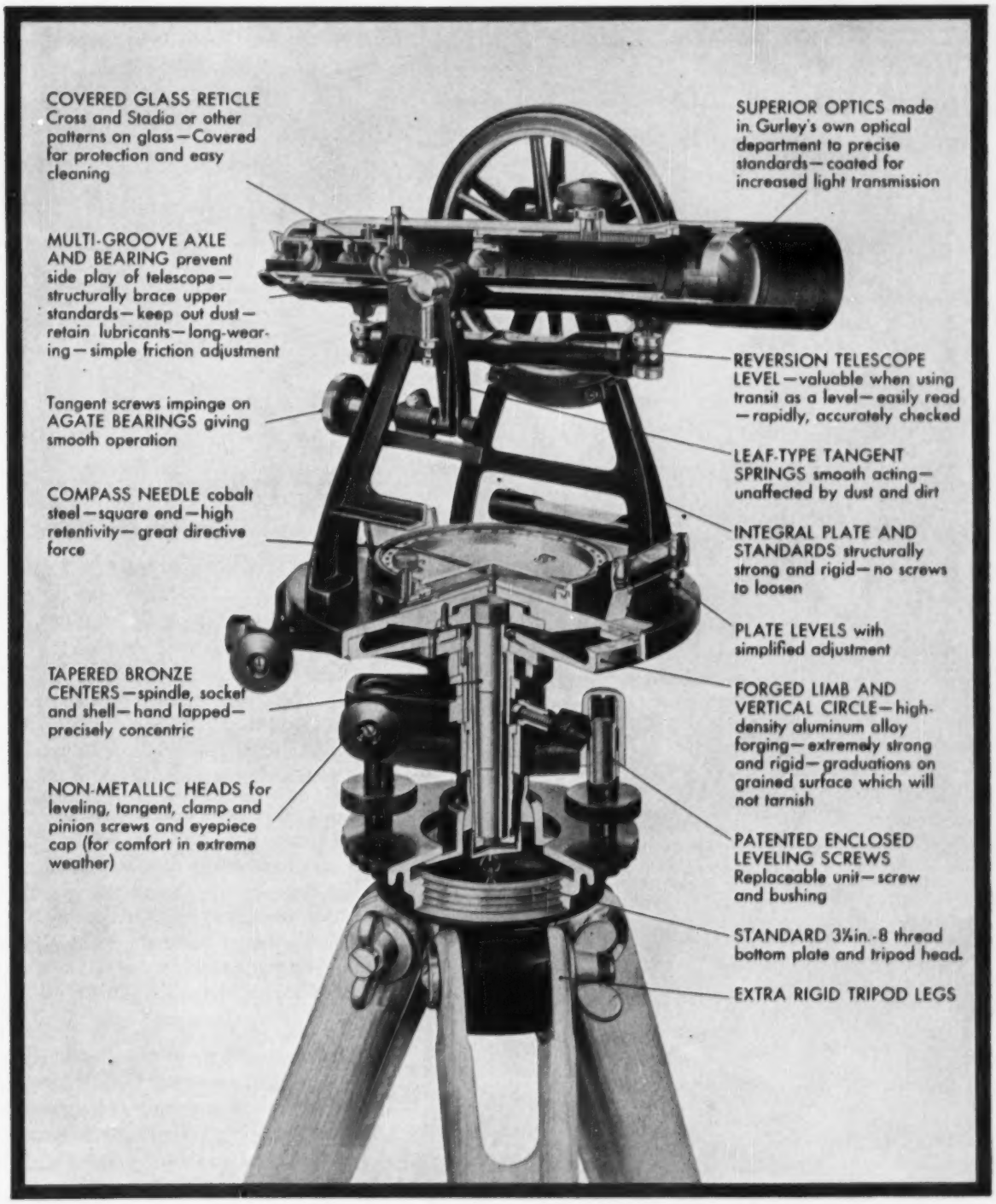
▲† Pa., Phila.—PARK IMPRVS.—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Wash., D. C., restoration and imprv. park area, Independence National Historical Park. $7,250,000. No appropriation.

▲ Texas—OIL PIPE LINE—Humble Pipe Line Co., 1216 Main St., Houston, 94 mi. 18 in. crude oil pipe line from Ector Station to Kemper Station, Reagan Co. $1,880,000.

▲† Texas—PARK—National Park Service, Dpt. Interior, Interior Bldg., 19 and C Sts., N.W., Wash. 25, D. C. roads and trails, buildings and utilities, Big Bend National Park, Mission 66 Program. $10,277,000. No appropriations.

▲† Virginia—HISTORICAL PARK—National Park Service, Dpt. Interior, Interior Bldg., 19 and C Sts., N.W., Wash. 25, D. C., restoration of buildings, battlefield area, nine employees homes, water and sewer sys. extens., Colonial Natl. Historical Park. Mission 66 Program. $1,150,000. No appropriation.

▲† Territory of Hawaii—PARK—National Park Service, Dpt. Interior, Interior Bldg., 19 C Sts. N. W., Wash. 25, D. C., roads and rails, buildings and utilities, Hawaii National Park. $3,360,000. No appropriation.

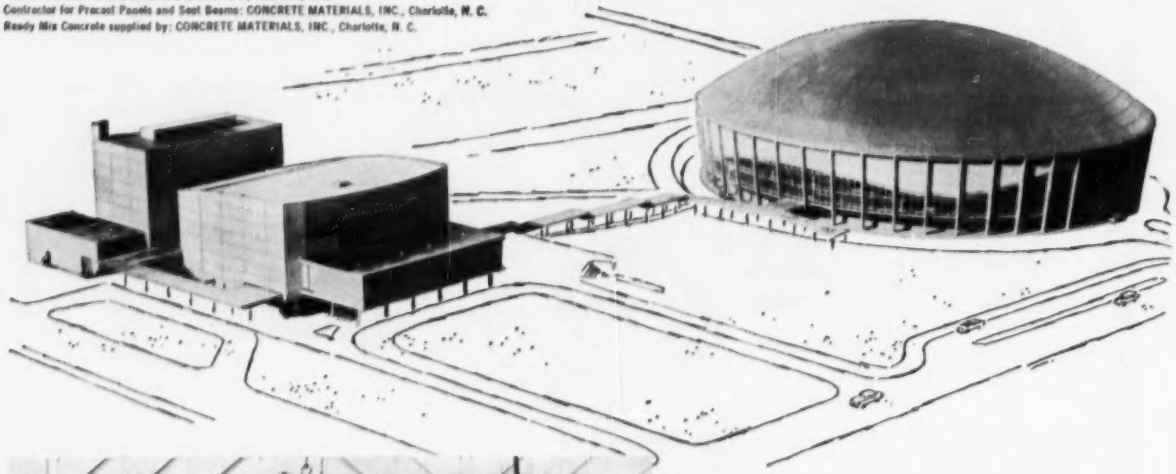

COVERED GLASS RETICLE Cross and Stadia or other patterns on glass—Covered for protection and easy cleaning
MULTI-GROOVE AXLE AND BEARING prevent side play of telescope—structurally brace upper standards—keep out dust—retain lubricants—long-wearing—simple friction adjustment
Tangent screws impinge on AGATE BEARINGS giving smooth operation
COMPASS NEEDLE cobalt steel—square end—high retentivity—great directive force
TAPERED BRONZE CENTERS—spindle, socket and shell—hand lapped—precisely concentric
NON-METALLIC HEADS for leveling, tangent, clamp and pinion screws and eyepiece cap (for comfort in extreme weather)
SUPERIOR OPTICS made in Gurley's own optical department to precise standards—coated for increased light transmission
REVERSION TELESCOPE LEVEL—valuable when using transit as a level—easily read—rapidly, accurately checked
LEAF-TYPE TANGENT SPRINGS smooth acting—unaffected by dust and dirt
INTEGRAL PLATE AND STANDARDS structurally strong and rigid—no screws to loosen
PLATE LEVELS with simplified adjustment
FORGED LIMB AND VERTICAL CIRCLE—high-density aluminum alloy forging—extremely strong and rigid—graduations on grained surface which will not tarnish
PATENTED ENCLOSED LEVELING SCREWS Replaceable unit—screw and bushing
STANDARD 3⅝in.-8 thread bottom plate and tripod head.
EXTRA RIGID TRIPOD LEGS

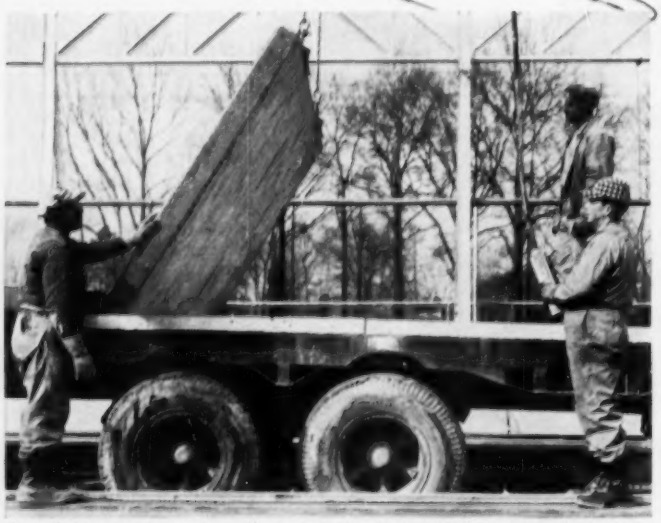
The Gurley Precise Transit

W. & L. E. Gurley, Troy, N. Y.

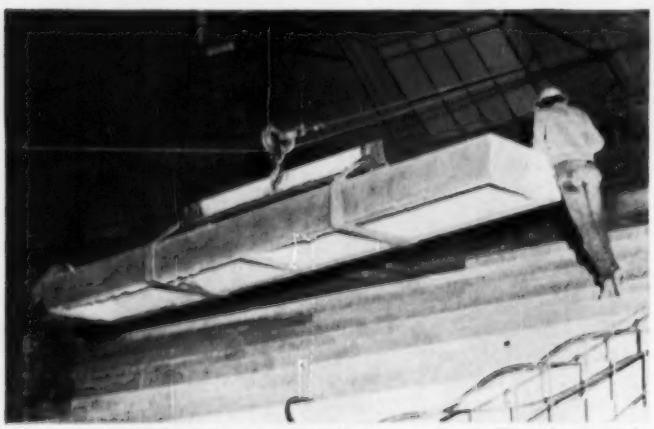
GURLEY

Architect: A. G. ODELL & ASSOCIATES, Charlotte, N. C.
Consulting Engineers: SEVERUD-ELSTAD-KRUEGER, New York City
General Contractor: THOMPSON & STREET CO., Charlotte, N. C.
Contractor for Precast Panels and Seat Beams: CONCRETE MATERIALS, INC., Charlotte, N. C.
Ready Mix Concrete supplied by: CONCRETE MATERIALS, INC., Charlotte, N. C.





One of 600 precast concrete wall panels made with Lehigh Early Strength Cement. Averaging 7½' x 20' in size, the panels form 60,000 square feet of the exterior walls in these structures.



Placing one of 1000 precast concrete seat beams in coliseum. These beams, each weighing 4000 lbs. were also made with Lehigh Early Strength Cement. Seating capacity of coliseum is 10,000.

trend toward tomorrow...

The David Ovens Auditorium and the Charlotte Coliseum, Charlotte, N. C. illustrate the trend toward concrete for tomorrow's construction. By combining precast and cast-in-place concrete the designers and contractors have provided structures that are durable, functional and pleasing to the eye.

Lehigh Cements were used throughout. In the manufacture of the 600 precast exterior wall panels and 1000 precast seat beams, Lehigh Early Strength Cement was used to cut labor, curing and overhead costs by 50%. Dependable Lehigh Portland Cement was used in the ready mix concrete for all cast-in-place concrete. Lehigh Mortar Cement was used to lay up all masonry units.

Whether you build big or small, traditional or modern, there are Lehigh Cements to meet your requirements. And remember, somewhere on nearly every job, Lehigh Early Strength Cement will save you time and money.

- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH PORTLAND CEMENT
- LEHIGH AIR-ENTRAINING CEMENT
- LEHIGH MORTAR CEMENT

LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 31 Massachusetts

STREETS AND ROADS

July 17 Massachusetts

BUILDINGS—BA

▲ **Conn., Wethersfield**—CENTRAL OFFICE—BA 7/18—State P. Wks. Dpt., 165 Capitol Ave., Hartford, central office for State Hy. Dpt. and Hy. Dist. No. 1. $3,000,000. Plans deposit $100. CD 6/26, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn. LB **$3,683,493.** (11 bidders) Windham-Conn. Turnpike Proj. 329-01 approx. 36,055 lin. ft. grad ng drainage, b. conc. pavement, incl. six grade separation structures, one bridge over railroad land concrete box culvert, Plainfield. Bids July 2. CD 6/15.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,

Conn.—**M. A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I. and **Brunalli Constr. Co.**, Summer St., Southington, Conn. CA **$6,699,690.** b. conc. 24,693 lin. ft., Conn. Turnpike, Norwich and Lisbon, Proj. 327-01, New London Co.;

Conn.—**Arute Bros., Inc.**, 560 S. Main St., New Britain, Conn. CA **$3,042,485.** b. conc. 24,693 lin. ft. Conn. Turnpike, Waterford and Montville, Proj. 325-01, New London Co.;

Conn.—**Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. CA **$9,179,912.** b. conc. 45,832 lin. ft. Conn. Turnpike, Montville and Norwich, New London Co. Grand total $18,922,087. Bids June 18, awarded June 29. CD 6/20, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

July 17 Maryland

BUILDINGS—LB & CA

▲ **Bethlehem Pike Constr. Co.**, Inc., 122 E. 42 St., New York, N. Y. CA **$3,000,000.** 1 story, 85,000 sq. ft. brick, block SHOPPING CENTER, parking area, FLOURTOWN, PA. Samuel Scharan & Assoc., and Food Fair Properties, Inc., 99 Park Ave., New York, N. Y. George W. Neff & Leonard Evantash, 1520 Locust St., Phila., Pa., archts. CD 7/14.

SOUTH

BUILDINGS—LB & CA

▲ **Richard S. Flink**, 125 N. Shore Dr., Miami Beach, Fla. CA **$4,000,000.** 2 story, irregular shaped Aztec MOTEL, 128 units, 16901 Collins St., MIAMI BEACH, FLA. Mico, Inc., 111 Lincoln Rd., Miami Beach, Fla. Melvin Grossman, 311 Lincoln Rd., Miami Beach, Fla., archt.

▲ **Bush Constr. Co.**, Flat Iron Bldg., Norfolk, Va., LB **$3,338,000** if completed in 12 months, LB **$3,388,600** if completed in 10 months, construct and finance Capehart HOUSING units, 270 family type units in 38 single and 23 two story dwellings, Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids June 27. CD 6/20.

▲ **Oman Constr. Co.**, Acklen Park, Nashville, Tenn. CA Total est. **$50,000,000.** PAPER MILL, MYRTLEWOOD, ALA. Marathon Corp., Menasha, Wis. CD 4/30.

▲ **Gilbane Constr. Co.**, 90 Calverly St., Providence, R. I. CA Est. **$5,000,000.** 386,000 sq. ft. PLANT at Electric Typewriter Division, Belt Line Hy., LEXINGTON, KY. International Business Machines Corp., 590 Madison Ave., New York 22, N. Y. Pordyce & Hamby, 70 W. 40 St., New York, N. Y., engrs.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

July 17 Indiana

BUILDINGS—BA

▲ **Mich., Livonia**—FOOD DISTRIBUTION CENTER—BA 7/19—**Kroger Co.**, 1240 State St., Cincinnati, O., (selected list bidders), first section, 112,000 sq. ft. food distribution center. Total est cost $5,500,000. Hixson Tarter & Assoc., Victory Parkway, Cincinnati, O., engrs. and designers. CD 5/18.

HEAVY CONSTRUCTION—LB & CA

▲ **OH.O**—State Hy. Dpt., Columbus, Zone 15,

O.—**George H. Cheek Constr. Co., Inc.**, 300 McClure Bldg., Frankfort, Ky., LB **$85,216,** est. $88,500. (3 bidders) Type T-35 on B-119, 0.531 mi. SR 134-1.93, S-77 (3), Clinton Co.;

O.—**C. E. Edgington & Son**, 913 S. Main St., Findlay, O. LB **$139,802,** est. $136,900 (4 bidders) Type T-35 and B-119 and structure 0.386 mi. CR No. C-140, S-190 (4), Hancock Co.;

O.—**Ralph Myers Contg. Corp.**, Box 235, Salem, Ind. LB **$2,480,957,** est. $2,565,500 (5 bidders) Type T-35 on B-20 and structures 3.32 mi. SR 7-(8.22-10.35), F-430 (11) Village of Brilliant, Jefferson Co.;

O.—**Elmer Borchardt, Inc.**, Castalia, O., LB **$434,732,** est. $391,800 (1 bidder) Type T-35, 6.446 mi. SR 163 (31.86-37.16), S-1104 (2), Village of Marblehead, Ottawa Co.;

O.—**Manix Bros.**, R.R. No. 1, Greenville, O., LB **$114,811,** est. $117,500 (4 bidders) Type T-35 on B-119 and structure 0.643 mi. SR 122-11.14, S-115 (2), Preble Co.;

O.—**The Union Building & Constr. Corp.**, 631 Main Ave., Passaic, N. J., LB **$4,471,711,** est. $4,471,600, (8 bidders) Type T-71 and structures 6.361 mi. USR 40R-6.97, City of Springfield, Clark Co.;

O.—**W. P. McCarren**, Walhonding, O., LB **$95,146,** est. $107,600, Type T-3 on B-20, 0.687 mi. USR 36-2.67, Coshocton Co.;

O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O., LB **$1,333,069,** est. $1,460,500 (4 bidders) Type T-35, T-71 and strucure 0.531 mi. USR 50-22.85, City of Cincinnati, Hamilton Co.;

O.—**The W. L. Harper Co.**, 2910 E. Highland Ave., Cincinnati, O., LB **$923,464,** est. $855,200 (2 bidders) Type T-71, 1.707 mi. SR 48-(6.97-7.59), City of Kettering, Montgomery Co.;

O.—**Earl E. Sockman**, Rte. No. 1, Fredericktown, O., LB **$94,478,** est. $111,600 (4 bidders) Type T-35 and structure 0.509 mi. SR 546-(4.82-5.01) (6.51), Richland Co.;

O.—**Brewer & Brewer Sons, Inc.**, P. O. Box 88, Chillicothe, O., LB **$345,126,** est. $392,100 (1 bidder) Type T-35, 1.87 mi. USR 23-13.75, Ross Co.;

O.—**The Peirce Constr. Co.**, 3005 Bellvue Rd., Toledo, O. LB **$731,209,** est. $764,200 (4 bidders) Type T-35 and structures 6.73 mi., SR 53-0.00, 17.58, Sandusky and Seneca Counties;

O.—**The Wynn Paving Co.**, 942 Evans Ave., Akron, O. LB **$109,434.** est. $117,900, Part 1, Type T-35; Part 2, Type T-35 and T-35 on B-119, 4.9 mi. SR 91-5.12, SR 261-14.71, Summit Co.;

O.—**Frysinger Constr. Co.**, 3770 N. High St., Columbus, O., LB **$833,375,** est. $878,100 (4 bidders) Type T-35 and structures 10.18 mi. USR 23-(0.00-2.04) Village of Upper Sandusky, Marion and Wyandot Counties;

O.—**Oyler Bros., Inc.**, 1324 Second St., S.W. Canton, O., LB **$133,729,** est. $117,000. (1 bidder) Type T-035 1.12 mi. SR 44-11.27, Stark Co. Bids June 26. CD 6/7.

BUILDINGS—LB & CA

▲ **The Austin Co.**, 16112 Euclid Ave., Cleveland 12, O. CA est. **$5,000,000.** design and constr. first unit of $19,000,000 expansion, 490,000 ft. WAREHOUSE, SPACE, BROOKLYN, O. American Greetings Corp., 1328 W. 78 St., Cleveland 2, O. Awarded June 22. CD 4/16.

▲ **Ralph M. Parsons Co.**, 617 S. Olive St., Los Angeles, Calif. CA est. **$15,000,000.** 2nd ultraforming unit 21,000 b/d capacity at its REFINERY, WHITING, IND. Standard Oil Co. of Indiana, 129 and Indianapolis Blvd., Whiting, Ind. CD 4/17.

▲ **Chicago Constr. Co.**, 707 Dundee Rd., Northbrook, Ill. Own Forces. **$5,500,000.** 250 HOMES Pine St. and Deerfield Rd., etc., DEERFIELD, ILL. A. J. Del Bianco, 5501 W. Irving Park Rd., Chicago, Ill., archt.

▲ **Townsend & Bottum, Inc.**, 2245 State St., Ann Arbor, Mich. CA Est. **$9,800,000.** 240,000 kilo POWER PLANT, mouth of Saginaw River, BAY CITY, MICH. Consumers Power Co., Dan Karn, pres., Jackson, Mich. CD 2/20.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

July 24 Iowa

HEAVY CONSTRUCTION—LB & CA

▲† **Henry C. Beck Co.**, 1st Natl. Bank Bldg., Dallas, Tex., LB **$3,888,000** (6 bidders) NIKE facilities, Ellsworth Air Force Base, Inv. 25-066-56-92, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 28.

▲ **City Constructors**, (McLaughlin, Inc., Ford Bldg., S. Birch & Sons Constr. Co., Ford Bldg., S. Birch, Inc., Ford Bldg., and Nilson-Smith Constr. Co., 800 2 St. S.), Great Falls, Mont. LB **$4,186,721,** est. $5,000,000. paving city streets, 540,000 cu. yd. excav., 307,420 ft. curb and gutter, 33,730 ft. straight curb, b. conc. surf., GREAT FALLS, MONT. City, Special Improvement Dist. 895, Great Falls, Mont. Bids June 27. CD 6/11.

▲ **Blue River Constructors** (Mid Valley Constructors, Houston, Tex., S. A. Healy, Chicago, Ill., J. A. Jones, Charlotte, N. C., Tompkins Co., Wash., D. C., A. S.

Neenah FOUNDRY COMPANY

construction castings

of sound quality... solid value

Patterns for
15,000 different Gray Iron Castings for

• Highway • Building • Communication
• Utilities • Industrial • Public Works
• Airport • Municipal • Transportation

Write for our 135-page
Catalogue "R," Second Edition

Neenah FOUNDRY COMPANY

NEENAH, WISCONSIN CHICAGO OFFICE
5445 North Nora Ave.
Chicago 31, Illinois

FOR CHARTER . . .

STEEL FLOATING

DERRICK

Now working—Soon available in New York

HULL: Steel, 110'x40'x7'. 18 watertight compartments.

DECK: 2 steam winches, 2 drums each. 4 anchors (2—3000 lbs., 2—850 lbs., danforth).

CRANE: Model 120, 45 tons at 40' radius. Coal-burning boiler, 100 h.p. vertical. 5 K.W. moon generator.

CRANE AND HULL IN EXCELLENT OPERATING CONDITION

For complete information write or call:

HUGHES BROS., INC.

17 Battery Place, New York 4, N. Y. Tel. WHitehall 4-1048
CLEARING HOUSE FOR MARINE DIFFICULTIES SINCE 1894

REINFORCED CONCRETE DESIGNS...

....all worked out!

• Does away with laborious calculations. Simply locate the table covering the member you are designing, apply span and load requirements, then *read off* concrete dimensions and reinforcing steel data. Follows latest codes and practices. Ten-day, money-back guarantee. No C.O.D.'s please.

CONCRETE REINFORCING STEEL INSTITUTE
DIV. D
38 South Dearborn Street, Chicago 3, Illinois

412 PAGES
$5.00
POSTPAID

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service. Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO BLOCKS

MADESCO TACKLE BLOCK CO.
EASTON, PA.

Engineered to Serve Your Special Service Needs

Horner Constr. Co., Denver, Colo., Colorado Constructors, Denver, Colo.) 725 W. 39 Ave., Denver, Colo., CA $38,857,250, Harold Roberts Transcontinental Divide Tunnel, DENVER, COLO. Bd. Water Comrs., City-County Bldg., Denver, Colo. Bids June 29. CD 7/3, under LB.

▲† **A. S. Horner Constr. Co. & Mid-Valley Utility Constructors**, 118 S. Pecos St., Denver, Colo. (joint venture) LB $4,175,615, est. $3,015,708. flood control outlet, service and access roads, water supply and electrical systems for Rio Chama Abiquiu Dam, CIVENG-29-005-56-17, NEW MEXICO. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 27. CD 6/5.

BUILDINGS—LB & CA

▲ **O. A. Stocke & Co.**, 115 S. W. 3 St., Rochester, Minn. LB $3,069,000. (5 bidders) general constr. SENIOR HIGH SCHOOL, ROCHESTER, MINN. Bd. Educ., R. W. Dorsett, bus. mgr., Rochester, Minn. Bids June 26. CD 6/1;
H. Dornack, 812 S. E. 3 St., Rochester, Minn. LB $685,000. (5 bidders) plumbing, heating and controls. (Rochester, Minn.);
Foster Electric Co., 211 First Ave., S. W. Rochester, Minn. LB $584,720. (Rochester, Minn.).

▲ **Fischer & Frichtel, Inc.**, 8703 St. Charles Rock Rd., St. Louis 24, Mo. Owner Builds. $12,000,000. 1,000 contemporary-styled RESIDENCES and 22½ acre SHOPPING CENTER on 410 acre tract on north side Natural Bridge Rd. between Lindbergh Blvd. and St. Charles Rock Rd., ST. LOUIS COUNTY, MO.

▲† **Allen M. Campbell**, Tyler, Tex. CA $3,483,826. 6 BARRACKS, Spec. 56-93, FORT RILEY, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids June 28. CD 6/20.

▲ **Refinery Engineering Co.**, Wright Bldg., Tulsa, Okla. CA Est. $10,000,000. 15,000 bbl. per day REFORMER and UNIFIER, CORPUS CHRISTI, TEX. Suntide Refining Co., Viola Rd., Corpus Christi, Tex.

▲† **Lawless & Alford, Inc.**, P.O. Box 600, Austin, Tex., CA $4,448,374, est. $3,579,908, eight 3 story BARRACKS, ENG-41-443-56-90, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids June 26. CD 6/28, under LB.

▲† **C. L. Browning, Jr.**, 903 Basse St., San Antonio, Tex., CA $5,314,446, 440 sets family living quarters, HOUSING, ENG-25-066-56-85, CAMP CARSON, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 21. CD 6/27, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 25, 26 California

HEAVY CONSTRUCTION—LB & CA

▲† **Winston Brothers Co.**, 1532 California St., Monrovia, Calif. CA $8,576,388. constr. Casitas Dam, Ventura River Proj., Ventura Co., Spec. DC 4701, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Fulton and Marconi Aves., Sacramento, Calif. Bids June 21, awarded July 3. CD 6/27, under LB.

▲† **Hawaiian Dredging Co.**, **Pomeroy Constr. Co.** and **Koster**, 120 Montgomery St., San Francisco, Calif., LB $8,258,000. bachelor officers quarters, 2nd increment operation bldg., tacan bldg., runways, 2 warehouses, bridge, etc. NBy 3315, AGANA, MARIANAS ISLANDS, GUAM. Chief of Bureau Yards & Docks, Naval Contr. Div., 333 Fell St., San Francisco, Calif. Bids June 25. CD 5/11.

BUILDINGS—LB & CA

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif. CA Est. $6,500,000. second SOVAFORMER UNIT at refinery, FERNDALE, WASH. General Petroleum Corp., Ferndale, Wash. CD 2/23.

▲ **The Guy E. Hall Co.**, Box 1086, Bakersfield, Calif. CA $4,530,000. (2 bidders) 7 story, concrete COURT HOUSE, ADMINISTRATION BLDG., BAKERSFIELD, CALIF. Bd. Supervs. Kern Co., 1100 26 St., Bakersfield, Calif. CD 5/22.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Dutton-William Bros. Ltd.**, Pacific Bldg., Calgary, Alta. CA Est. $20,000,000. Fourth of 7 sections 574 mi. route from Alberta to Winnipeg, laying pipe for natural gas pipe line, Princess Field, ALBERTA. Trans-Canada Pipe Lines Ltd., 505 8th Ave., Calgary, Alta. CD 5/29/56.

▲ **Canit Constr. Ltd.**, 507 Place d'Armes, Montreal, Que., CA $11,199,925, Lower Beauharnois Lock and Approaches, Soulangex Sect., St. Lawrence Seaway, near Montreal, QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Willington St., Ottawa, Ont. Bids June 12, awarded June 18. CD 6/20, under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Tecon Corp.**, 202 Davis Bldg., Dallas, Tex. CA Est. $4,500,000. constr. FLOUR MILL, near PORT-AU-PRINCE, HAITI, Societe Hatiene de Minoterie, Port au Prince, Haiti. CD 2/9, under CA.

(Proposal Advertisement see pp. 114 to 118)

Cut down man hours! Speed up hole drilling!

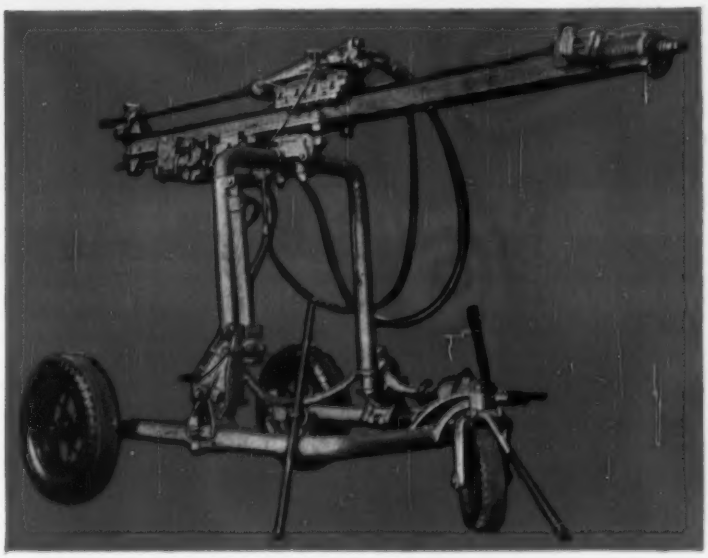
2 new more powerful Thor wagon drills!

General purpose SW-1 • Heavy duty BW-2

Now Thor offers two new wagon drills to fit every drilling requirement — wagon drills which will outperform and out-last other models. Drill holes in any direction, at any angle, on level or sloped ground. One man operation cuts costly man hours. Check these features on the new heavy duty BW-2 and the general purpose SW-1 and then call your Thor contractors tool distributor for a free trial of the model that fits your job.

THOR SW-1

Compact size—3 wheel reinforced rig • Weight with model 75 drifter—768 lbs. • 2 handle controls movable along mast • Handles up to 3½" bore drifter • New centralizer swings out of way for close drilling • Mast swings 360° vertical or horizontal • Wet or dry operation



THOR BW-2

5 h.p. rotary air motor • 3 wheel reinforced heavy-duty rig • Variable speed control • Motor and controls movable along mast • Wet or dry operation • Mast swings 360° vertical and horizontal • New centralizer swings out of way for close drilling • 800 to 1000 lbs. pulling power for steel removal • Spring buffer prevents chain breakage • Equipped with Thor 105 drifter. (4" bore)

Thor PORTABLE POWER TOOLS

THOR POWER TOOL COMPANY, AURORA, ILL.

Atlanta	Chicago	Detroit	Newark	St. Louis	Export Division,
Birmingham	Cincinnati	Houston	Long Island City, N.Y.	San Francisco	New York City
Boston	Cleveland	Los Angeles	Philadelphia	Seattle	
Buffalo	Denver	Milwaukee	Pittsburgh	Toronto Canada	

an ACCO product

American Cable TRU-LAY VHS | 15% STRONGER

New VHS Dragline Lasts 73% Longer

Draglines on the excavator above, used in coal stripping operations at the Kingston Mining Company, Plymouth, Pa., get really rough service. The best Improved Plow Steel lines formerly lasted only 700 hours.

Now, however, lines of new TRU-LAY VHS are averaging 1,250 hours—giving 73% longer service life.

Records like these are being duplicated by VHS Draglines all over the country. For new VHS is tougher—more wear resistant. And it has all the advantages of preformed construction.

STRONGER AND SAFER

New VHS is 15% stronger than Improved Plow Steel, which was the strongest available until now. Its additional strength enables you to handle heavier loads with the same diameter line. And it gives you a higher factor of safety during the entire service life of the rope.

FOR SHOVEL HOIST ROPES AND SCRAPER ROPES, TOO

TRU-LAY VHS was developed particularly for the toughest applications in the construction and mining industries—draglines, shovel hoist ropes and scraper ropes. It stands up better under the rough treatment these ropes get.

LESS "DOWN TIME"—CUTS COSTS

Because it's tougher and more wear resistant, TRU-LAY VHS rope lasts longer, costs less to use and cuts "down time" of equipment for wire rope replacement.

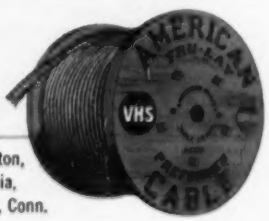
TRU-LAY VHS ropes are easy to order. Just ask for TRU-LAY VHS Shovel Hoist Ropes, Scraper Ropes or Draglines in the size you want. You don't need any complicated specifications.

Your American Cable Distributor has TRU-LAY VHS *in stock now. See him or write to the nearest American Chain & Cable Company Office.*

ACCO

American Cable Division

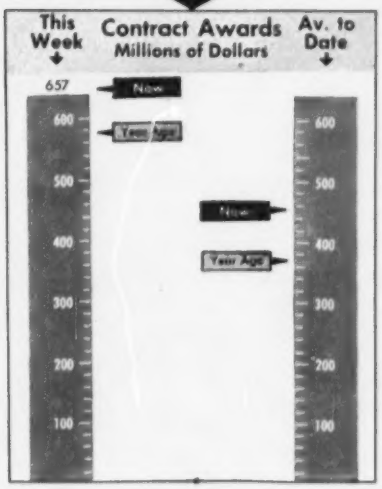
AMERICAN CHAIN & CABLE



Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	1956	Cum. 28 wks Chge %
	$ millions		
Federal	$77.0	$1,039.5	−2
State and Municipal	143.1	3,558.6	+25
Total Public	220.1	4,588.1	+18
Total Private	437.2	7,822.3	+21
U. S. Total	$657.3	$12,410.4	+20
By Type of Work			
Waterworks	$41.6	$206.8	+45
Sewerage	10.4	330.0	+54
Bridges	8.9	344.2	+38
Highways	52.8	1,293.4	+121
Earthwork, Waterways	13.9	456.5	+47
Buildings:			
Public, Excl. Hosp.	47.4	1,118.5	+18
Public Housing	14.8	200.5	+28
Private Housing	71.9	3,164.9	−13
Commercial	23.4	1,013.6	+5
Industrial	338.3	3,257.3	+124
Unclassified	34.1	1,024.7	−12
U. S. Total	$657.3	$12,410.4	+20

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

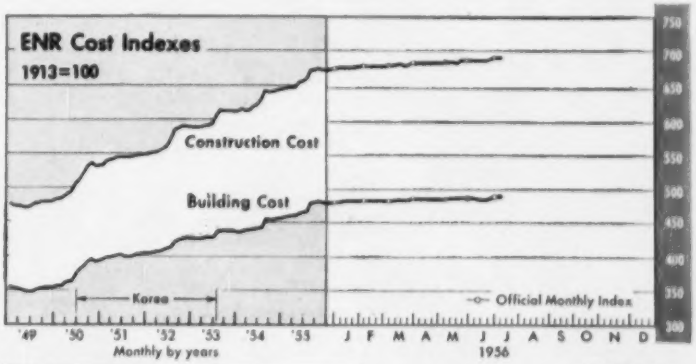
NEW CAPITAL FOR CONSTRUCTION

	Week of July 5	1956	Cum. 27 wks Chge '55-'56 %
	$ millions		
Corporate Securities	$53.2	$2,301.4	+28
State and Municipal:			
All Except Housing	70.5	2,611.9	+12
Housing	...	41.2	−35
Federal Loans	...	78.5	+11
Federal Aid	...	905.0	+853
Total Nonfederal	$123.7	$5,938.0	+36
Federal Appropriations:			
In U. S.	$671.4	$924.1	+678
Outside U. S.	...	12.9	−4
Total New Capital	$795.1	$6,875.0	+53

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of July 5 1956	% Change from June 7 1956	July 7 1955
Construction Cost	695.15	+0.3	+3.6
Building Cost	489.71	+0.2	+2.7

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.030; Building Cost by 1.845.
1949 = 100: Divide Construction Cost by 1.770; Building Cost by 3.518



CONTRACTS AWARDED

Millions of dollars	1956 June	1956 6-Mos.	% Change from 1955 June*	% Change from 1955 6-Mos.
Total U. S., ENR reported	$1,621.6	$11,363.3	+ 8	+21
Private	895.8	7,193.6	+ 1	+22
Public	725.8	4,169.7	+17	+19
State and Municipal	597.2	3,269.8	+27	+25
Federal	128.6	899.9	−13	+ 1
ENR Volume Index, 1913 = 100	636	709**	+0.5	+15

NEW CONSTRUCTION CAPITAL

Millions of dollars				
Total U. S.	$2,064.8	$6,079.9	+134	+40
State and Municipal Bond Sales	534.9	2,582.6	+ 6	+12
Corporate Security Sales	378.7	2,248.2	+24	+27
Federal Loans & Aid (nonfed work)	920.1	983.5	+7319	+552
Federal Appropriations (fed work)	231.1†	265.6†	+296	+101

* Based on average week. ** Average per month. † Includes funds for outside U. S.

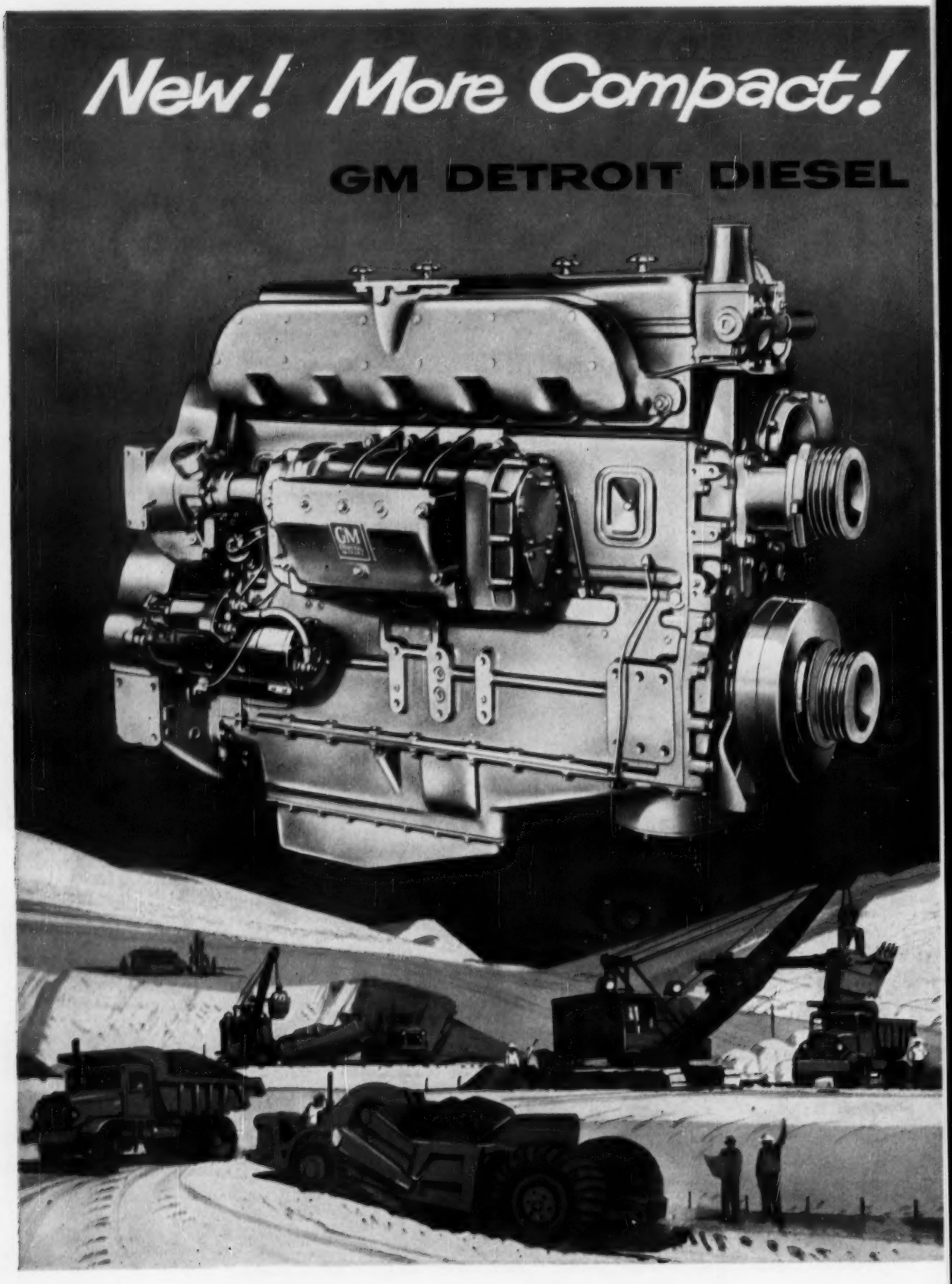
MATERIALS SHIPMENTS

Unit	Mar. (Mr) Apr. (A) May (M) 1956	Cum. (No. of Mos.) 1956	% Change fr. Year Ago Mo.	% Change fr. Year Ago Cum.
Portland Cement, Bur Mines, thous bbls	22,222(Mr)	51,424(3)	− 2	+ 3
Conc Paving Awards, PCA, thous sq yd	8,513(M)	39,613(5)	− 3	− 4
Fabricated Structural Steel, thous tons	306(M)	1,439(5)	+37	+27
Bookings, AISC, thous tons	358(M)	1,840(5)	+18	+38
Reinforcing Bars, Net, AISI, thous tons	228(A)	802(4)	+24	+36
Lumber, NLMA, mil fbm	3,259(A)	12,391(4)	− 6	− 3
Orders, mil fbm	3,162(A)	12,551(4)	−12	− 4
Production, mil fbm	3,138(A)	12,070(4)	− 3	− 3
Douglas Fir Plywood, DFPA, 3/8" basis				
Production (ave per week), mil sq ft	94.2(M)	102.7(5)	− 3	+ 6
Orders (average per week), mil sq ft	84.0(M)	93.0(5)	− 8	− 5
Clay Products, Bur Census				
Brick, Ungl, Common, Face, mil bri	541.4(Mr)	1,431.5(3)	− 5	+ 3
Vitrified Clay Sewer Pipe, thous tons	159.5(Mr)	435.5(3)	+ 7	+22
Structural Tile, Unglazed, thous tons	54.7(Mr)	160.2(3)	−21	−17
Asphalt Products, Bur Census				
Asphalt Roofing, thous sales sqs	3,951(A)	17,920(4)	−34	− 3
Asphalt Siding, thous sales sqs	64(A)	380(4)	−36	− 3
Aluminum Products, Net, Bur Census				
Sheet and Plate, Non-Heat, Treatable, mil lb	99.7(A)	397.5(4)	+18	+25
Wire and Cable, mil lb	28.5(A)	105.8(4)	+48	+33
Extruded Shapes, Soft Alloys, mil lb	54.6(A)	220.4(4)	+10	+19

EMPLOYMENT AND FAILURES

Contract Const Employ, BLS, thous	3,030(M)**	...(5)**	+8.9	...**
Contractor Failures, Dun & Bradstreet				
Number	132(M)	702(5)	+ 9	+31
Liabilities, thous	$8,877(M)	$38,977(5)	+82	+20

** Revised series. Back data not yet available.


New! More Compact!
GM DETROIT DIESEL

More Versatile!

300-H.P. SERIES 110 ENGINE

Now available to fit a broader range of power equipment

Now the best 300-horsepower Diesel is even better than ever—ready to step up production and cut costs on any job you name.

It's the time-proved General Motors Series 110 Diesel, newly equipped with a side-mounted blower similar to the one used on the famous 71 Series. It's a more compact engine. It's shorter. It's lower. It fits more applications than ever before.

You can have this new GM Detroit Diesel Series 110 engine installed in off-highway trucks and move bigger loads faster.

You can use it to increase the power of heavy crawler tractors, scrapers and air compressors—get more work per day and per dollar.

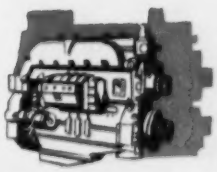
And, in practically no time at all, you can have this new Series 110 Diesel installed in almost any 3-yard shovel—to move earth faster at less cost.

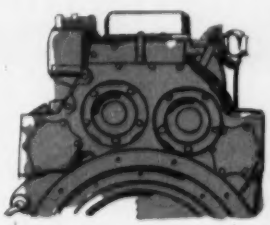
The new blower makes the Series 110 engine far more versatile—available with *either* right- or left-hand rotation, and a wider range of accessory drive outlets—*four* accessory drives on the rear of the engine, and *four* fan-mounting positions on the front.

This new Detroit Diesel Series 110 engine takes on all comers in operating efficiency. It's a leader in work output per dollar. Let your local GM Detroit Diesel Distributor or Dealer show you what we mean.

New Compactness—

The side-mounted blower eliminates former style blower at the end of the Series 110 engine and also cuts down height. Easier to install—easier to maintain.



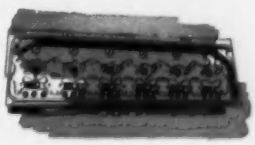


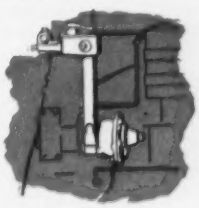
New Flexibility—

Four accessory drive outlets on rear of engine. You can direct drive both a hydraulic pump and an air compressor off the engine at the same time. New gear train features wider gears with increased helix angle for longer life. Blower and camshaft loads are split.

New long-life Cylinder Head

Has many design improvements, including integral water manifold and drilled passages for rocker-arm lubrication. Water manifold studs and gaskets eliminated. Outside rail gives extra rigidity.





New Governor

Is more easily serviced—utilizes many Series 71 parts. Provides for tachometer drive. An accessory drive may also be taken off the governor drive gear.

DETROIT DIESEL

Engine Division of General Motors, Detroit 28, Michigan

Single Engines . . . 30 to 300 H.P. Multiple Units . . . Up to 893 H.P.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

AMERICA'S LARGEST BUILDER OF DIESEL ENGINES

"We made the right decision when we bought Lippmann"

"The way your crushing plant is operating for us convinces us more than ever that we made the right decision two years ago when we bought Lippmann crushing, screening and conveying equipment to replace the brands we had been using. The whole plant from feeder through to the hoppers has done a really good, consistent job of producing more material at lower costs. No doubt about it, it's been a big help job-wise, cost-wise and profit-wise."

(Signed) JOHN L. KELLEY, Owner
Roscoe, Illinois

LIPPMANN STATIONARY CRUSHING PLANTS

30 x 36 Rock-Ram Stationary Crushing Plant in Ohio includes Lippmann feeder, conveyors, screens, pulverizer and bins.

24 x 36 Lippmann Crushing Plant mounting a Grizzly-King jaw crusher, feeder, vibrating screens, washers and conveyors. Location — Wisconsin.

Complete Lippmann crushing, screening, washing plant (conveyors, screens, crusher, hoppers, scrubber and washer) in an Ohio pit.

There are good reasons why Lippmann crushing plants give Mr. Kelley, and so many others a feeling of satisfaction for having switched to Lippmann.

First of all, they now enjoy the effectiveness of Grizzly-King and Rock-Ram crushing, Screen-All screening and Ever-Seal conveying — top machines all. Then, too, engineering "know how" that for 33 years has kept Lippmann crushing equipment in the foreground, is applied to the over-all layout and design of these plants. Add to this Lippmann's practice of backing its products to the limit and it's no wonder the switch is to Lippmann.

You can easily learn more about the many advantages of Lippmann design by contacting your Lippmann distributor or the factory direct. Lippmann Engineering Works, 4645 West Mitchell Street, Milwaukee 14, Wisconsin.

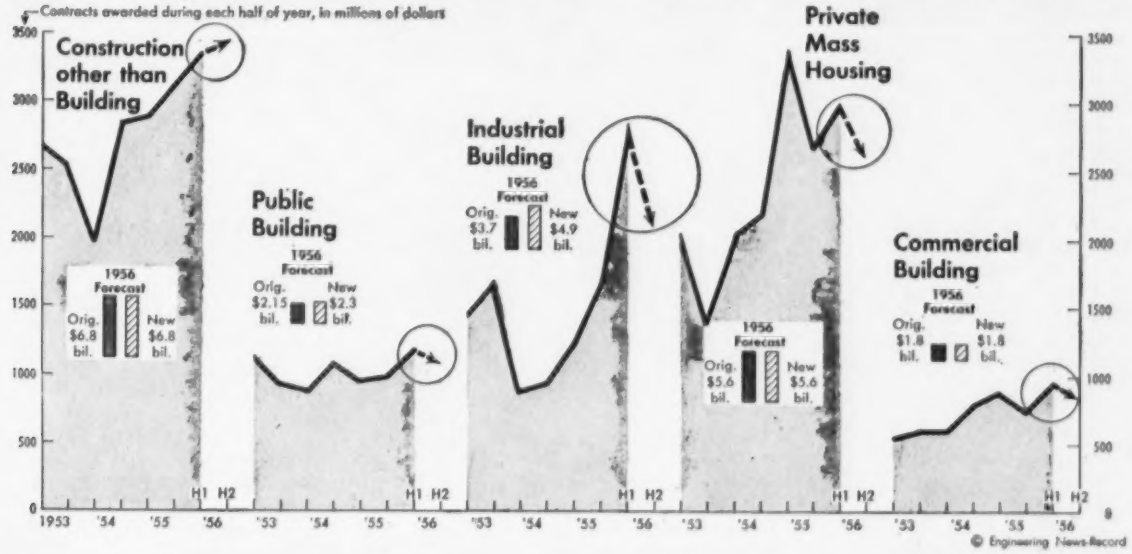
1900-56-5

LEW LIPPMANN

SINCE 1923

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

Heavy Construction Contract Awards: Outlook for Second Half of '56



Forecast of the Second Half by Regions

Even the chill wind of a nationwide steel strike apparently has not taken the glow off construction prospects for the next six months, an ENR survey shows this week. Every region seems optimistic, although a prolonged steel strike could change the picture quickly.

Although there are minor variations from region to region, industrial and commercial building and heavy construction are at or near peak rates and promise to stay strong for the months ahead.

Highways, industrial building and commercial building are mainsprings of construction activity in the West of the Mississippi and Far West regions. Power projects, some of them of giant size, are also active in the Far West.

School construction apparently is the hottest category in the Middle Atlantic region with big programs under way in every state. The industrial building picture is mixed. But shopping centers and a large volume of office construction in New York City make commercial building a big item in the outlook for the rest of this year.

Highways, schools, industrial buildings and sewerage and water work shape up as the most important construction categories in the Middle West. Some of the areas see a drop off in commercial building which had a strong first half, but one state (Indiana) reports that suburban shopping centers are "popping up faster than ever" and Chicago's shopping center boom (both in the city and in the suburbs) shows no signs of slackening.

The South is relying on its present industrial building boom, plus a continued demand for commercial building and some major public works programs. Shopping centers are making headlines in Florida, Georgia and Louisiana and expansion-minded chemical firms are keeping industrial building at record levels along the Lower Mississippi.

New England's six-month outlook hinges on mammoth roadbuilding plans, shopping centers (still going strong in Massachusetts and Connecticut) and schools. Industrial building is active throughout the larger New England states. Bridges and local flood-control projects also are due to reach the contract stage in Connecticut during the last half of the year.

Here's how the regions report their prospects:

New England

Two question marks hang over New England's construction prospects for the next six months: a $200-million public works bond issue awaiting action by the Massachusetts legislature (with $180 million earmarked for roads) and the steel strike.

Even without the big bond issue, Massachusetts will continue to make some sizable roadbuilding awards: one, a $10-million Central Artery extension within 90 days.

The Bay State's school program will amount to an estimated $15 million in the next six months. However, the steel strike will hit school construction fast and hard—and will also put a crimp in work on proposed new hospital starts.

Connecticut's school building program also will move along with an estimated $35 million to $45 million expected to reach the contract stage in the second half of the year.

Shopping centers are on the increase in Massachusetts and are still going strong in Connecticut. Office buildings don't shape up as much of a factor in New England during the next six months, but industrial building is zipping along. Boston's famed Route 128 is due for another rash of industrial construction when the south section of the peripheral road is opened. Connecticut is expecting industrial building awards to flow in a steady stream for the rest of the year, following the historical pattern of small plants.

Bridges promise to have an impact on Connecticut's economy. The first of four bridges to span the Connecti-

. . . Regional outlook for second half

cut River (total cost of the four: $65 million) will be started in October. Until now, this river has been a serious barrier to the growth of the eastern portion of the state. But the planning of the bridges already has brought residential and industrial migration to the east, fanning out from Hartford.

Local flood-control projects also are being pushed in the Nutmeg State. One of the contracts in the second half of the year will be for the first phase of the $10-million Park River control project in Hartford.

Although New England has some major long-range plans for water and sewerage construction, the second half of the year will be marked mostly by small projects, including part of a $65-million sewerage program for Boston and the Metropolitan District Commission area. Several tunnels are involved.

Middle Atlantic

The states in the Middle Atlantic region have spiced their six-month forecasts with a good deal of variety. On the whole, the outlook is good.

Before the steel strike, Pittsburgh was economically strong and was ready for expansion. Now the prospects have changed markedly. Contractors will be fairly busy with work let previously but not many projects are reaching the bid stage currently.

New York's outlook is brighter. The Buffalo area expects to maintain the pace set in the first half—winding up the year about 5% ahead of 1955. In the New York City metropolitan area, construction awards will be higher in the second half of the year than in the first six months with the exception of Nassau County, where the first-half level will be maintained.

Baltimore sees a solid second half because of industrial expansion and a buildup for commercial building.

The Philadelphia, eastern Pennsylvania, southern New Jersey, Delaware area is the most cheerful of all. This area expects the year to wind up 15% to 20% over 1955, with the second half topping the comparable 1955 period by as much as 25%. There are some qualifiers—such as availability of steel and cement.

Schools dominate the Middle Atlantic outlook. Baltimore County will have the biggest six-months in its history. Pittsburgh will get its share. And the Greater Philadelphia area probably will spend more than $50 million for schools in the second half. New York City stands to top them all if the Board of Estimate approves a $108-million school construction plan that calls for the first contracts to be let in October.

Commercial building is also well up on the Middle Atlantic's list. New York City expects awards to be made for seven new office buildings (with a total price tag of $90 million). And, the city's vast suburban area is booming with shopping centers, from Long Island's South Shore to Westchester County.

Baltimore is bustling with hotels, luxury apartments and some large redevelopment programs. Pittsburgh may get a new Hilton Hotel estimated to cost $15 million. And, a $30-million shopping center is scheduled for a suburb of Buffalo.

All of the states have big roadbuilding programs ready to go. One big project that may reach the bid stage this year is Pittsburgh's $25-million Fort Pitt Tunnel.

Some areas in New York State are booming industrially, such as Buffalo, Suffolk County, Long Island, and Westchester County (labs and light industry). Pennsylvania, carrying one of the heaviest tax burdens in the nation, isn't doing too well on industrial development. Baltimore's industrial building outlook hinges largely on Bethlehem Steel's expansion at Sparrows Point.

The South

Riding high, wide and handsome with an industrial building boom, a continued surge in commercial building and some major public works programs, almost every state in the South hopes to set new construction records in the next six months.

Major chemical firms, for example, have announced plans so far this year for more than $200 million worth of new or expanded facilities along the Lower Mississippi River. While some of this reached the construction stage in the first half of the year (notably a $52-million Kaiser aluminum plant between New Orleans and Baton Rouge), most of this work will be coming along in the July-December period.

Commercial building in the South has been active. One of the biggest factors is the advent of mammoth shopping centers, many of which are in the planning stage, scheduled for early construction starts.

Tennessee reports that the rush of the population to the suburbs has brought the heyday of the shopping center to that state. Some are small; others are big by any standard (e.g. a $2.7-million shopping center slated to be started in Madison, Tenn., before the end of the year).

Alabama is moving into this field rapidly. In Florida, shopping centers are turning up so rapidly that it is almost impossible to keep track of them. Georgia and Louisiana have some big ones headed for the construction stage, including one for $25 million near Gretna, La. Only in South Carolina has the shopping center pace slowed to a walk.

Georgia and South Carolina won't be active in the school building field for the rest of the year but North Carolina, Florida and Tennessee have big programs under way.

In the public works field, Louisiana will be going strong on water supply and sewerage construction. Tennessee is launching a $37.5-million sewer construction program.

Middle West

The July-December period will be better for construction than the first half of the year, for the Midwest, according to ENR's survey. Industrial building is still turning up in heavy volume, school construction is at an all-time high and roadbuilding is expected to continue at a high level.

Michigan is especially optimistic with observers there estimating that heavy construction will increase 20% in the second half. Indiana school work and roadbuilding will gain while other types of work will remain at present levels. In Cincinnati, industrial building, highways, sewage, waterworks, and schools are expected to hold close to the 1955 level while commercial building probably will drop. Highways, industrial building and shopping centers are booming in the Chicago area.

The Chicago outlook is aided by some tollroad projects (both for the state and for Chicago and Cook County) which will be awarded in the latter part of the year. Industrial building has been sensational in Chicago. Total plant investment for the first half of the year was nearly double the same period in 1955. And, the area stands to gain (starting in the next six months) from early birds who want the city's choice location after the St. Lawrence Seaway is completed.

Also tagged for Ohio is a complete new city—in the North Greenhills area—that would cost more than $100 million, would include 1,100 homes,

(*Continued on page* 109)

Enjay Butyl—*today's fabulous rubber* gives new life to backyard wading pools

Enjay Butyl brings long life and performance strength to the sensational new Bil-O-Matic®, rubberized fabric wading pool manufactured by the Bilnor Corporation. With its resistance to aging, sunlight, tear and impact damage, the pool manufactured with Enjay Butyl gives outstanding performance. Unlike other pools that cracked and leaked after exposure to sunlight, these *new* pools retain their durability under even the toughest conditions of wear, stress, and weather. The Enjay Butyl label on the carton assures the customer of exceptional quality.

Extremely versatile, Enjay Butyl has led to improved product performance in a wide variety of fields. This amazing, low-cost rubber is *immediately available* in non-staining grades for white and light-colored applications. To find out where Enjay Butyl can *cut costs* and *improve your product*, contact the Enjay Company. Complete laboratory facilities, fully staffed by trained technicians, are at your service.

ENJAY BUTYL

Enjay Butyl is the super-durable rubber with *outstanding* resistance to aging • abrasion • tear • chipping • cracking • ozone and corona • chemicals • gases • heat • cold • sunlight • moisture.

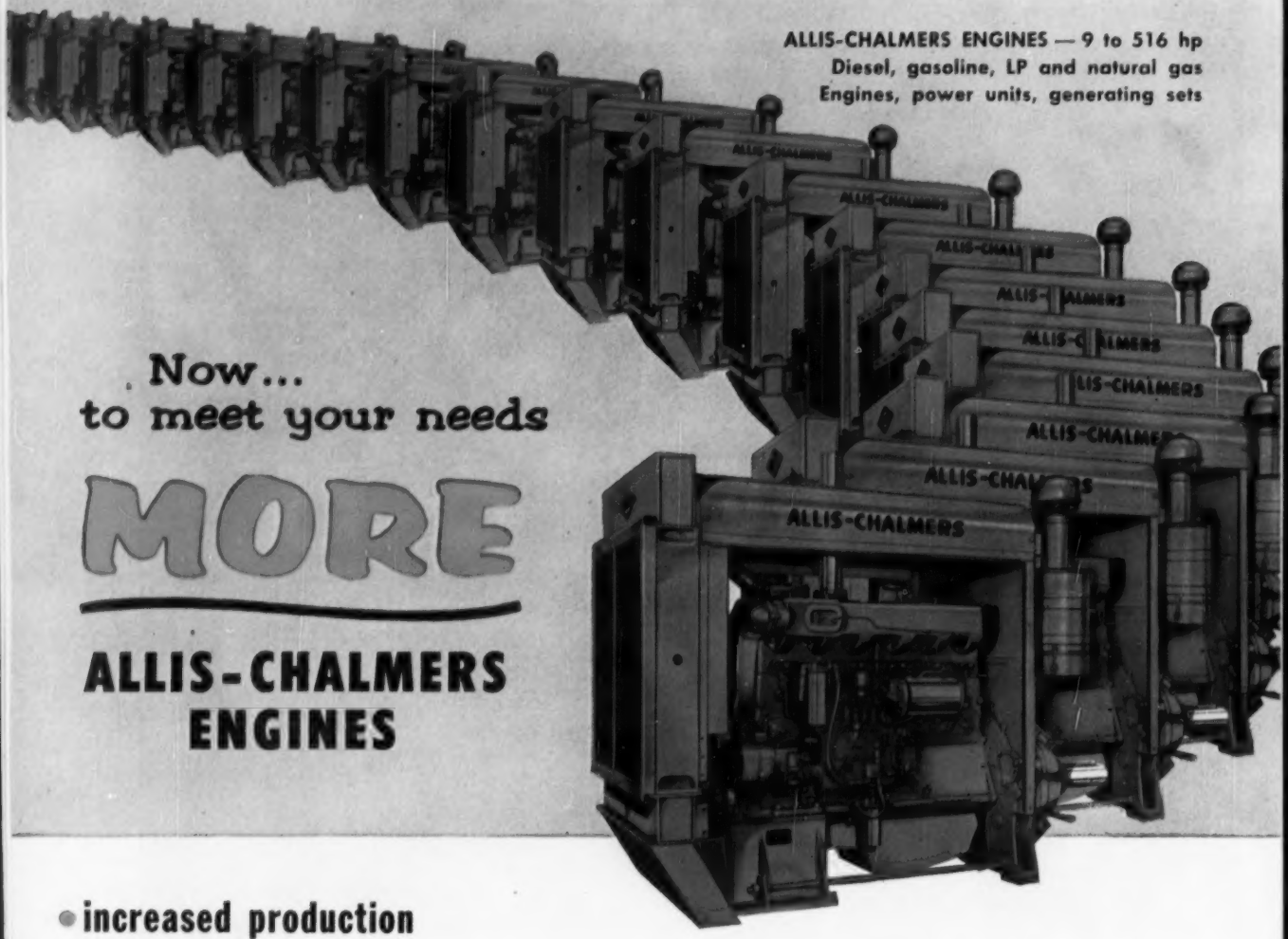
ENJAY

Pioneer in Petrochemicals

ENJAY COMPANY, INC., 15 West 51st Street, New York 19, N. Y.

Other offices: Akron • Boston • Chicago • Los Angeles • Tulsa

ALLIS-CHALMERS ENGINES — 9 to 516 hp
Diesel, gasoline, LP and natural gas
Engines, power units, generating sets



Now... to meet your needs MORE

ALLIS-CHALMERS ENGINES

- **increased production**
- **improved standards**
- **expanded service**
- **greater parts availability**
- **more parts interchangeability**

The production of Allis-Chalmers engines goes up, up, up to meet your needs. The 1956 production is expected to reach an all-time high — and 1955 output was many percent greater than 1954's. A multi-million-dollar expansion of facilities will further boost production.

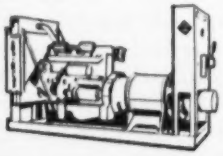
But there are not only *more* engines to meet your needs, there are *better* engines — as Allis-Chalmers research and development continues to pioneer improvements, and as production and inspection standards are set even higher.

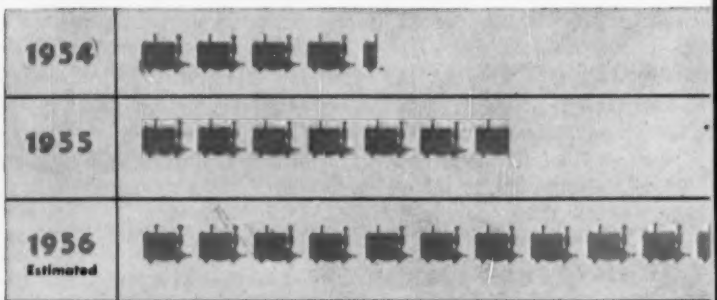
Along with this comes an expansion of customer service and greater parts availability, too, as sources of parts and service are moved closer to you.

More and more, it's Allis-Chalmers engines and service to meet your needs.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

A complete line of improved engine generator sets from 5 to 300 kw, for emergency and continuous duty, for marine, cooling tower and industrial use.





The 1956 production of Allis-Chalmers engines will reach an all-time high, with output many percent higher than in previous years.

ALLIS-CHALMERS

BE-3

. . . Regional outlook for second half

apartments, industries and schools. Part of this project is a $6-million shopping center. The whole southern Ohio area has been reaping the shopping center harvest. But it has not been sharing in the office building boom.

Urban renewal is getting attention in Cleveland and Chicago. Cleveland is starting its second project (covering 45 acres), while Chicago is studying a $225-million redevelopment plan for the city's South Side.

Detroit also has $25 million earmarked for urban renewal in the next six months as part of a slum clearance project. It fits into the Michigan plans this year for a construction-minded second half. Careful estimates indicate that the state will spend more than $860 million for construction in the July-December period, with municipal construction accounting for $254 million; schools, $145.6 million; industrial building, $192 million; commercial building, $130 million; roads, $92.5 million; hospitals, $34 million, and churches, $12 million.

West of Miss

The overall volume of construction activity in the states West of the Mississippi in the second half of the year will equal or better the first half slightly. Increased industrial construction is expected to offset a decline in homebuilding.

Commercial building is steadily gaining in importance in this region. Downtown Oklahoma City will be the scene of a commercial building boom unequaled in the past 27 years. Construction of office buildings will continue at a fast pace in the next six months, matching the area's industrial building growth.

Roadbuilding looks promising throughout the West of the Mississippi region for the next six months. This will be the biggest building year in history for the Iowa Highway Commission, which plans to let about $33 million worth of work in the next six months. Major emphasis will be on widening 1,000 mi of 18-ft roads to 24 ft.

Kansas has a $40-million highway program in progress. Missouri is starting its fifth fiscal year of a 10-year road program that calls for expenditures of about $55 million annually. Colorado's highway budget for the fiscal year started July 1 (exclusive of federal aid) is $36 million. A toll tunnel through the Continental Divide, for which $16 million worth of revenue bonds have been issued, will be placed under contract soon. But, a shortage of engineering personnel may be a stumbling block in the Colorado program.

In the public works field, this region has a large number of water supply projects in the planning stage. Houston is active in this. Both the Neches and Sabine River Authority are making headway with plans to increase available water supply. A $10-million bond issue is being marketed for a new dam, reservoir and pipeline system for Greater Little Rock, Ark. Construction on several dam projects in the north and east Texas areas are expected to start later this year. And, Denver is planning to let contracts for half of a $101-million construction program intended to double the city's water supply by 1970.

Industrial building is benefiting from almost all of these other programs, and is sparking some—water supply, for example. Houston is red-hot for industrial building. Without exception, every petroleum refinery and chemical plant in that area is either undergoing expansion now or has plans to expand in the next six months. And, some new plants are in the design stage. One of these is in the $40-million to $50-million class.

Similar industrial building activity is reported in most of the other states in the area. In size, the projects range from a rash of warehouses (mostly in the under-$1 million class) in the St. Louis area to such whoppers as a $57-million International Paper Co. plant now ready to reach the construction stage in Arkansas.

Far West

Non-residential construction is expected to more than offset any homebuilding drop in the Far West, giving that region a second half as strong or stronger than the first six months.

Power projects will be a tremendous factor in this construction picture. Work on Priest Rapids Dam is slated to start soon. Bids have been called for the first stage of the $200-million Rocky Reach Dam on the Columbia River and construction is expected to start this fall on a $58-million earth dam for the Lewis River in Oregon. And, Puget Sound Power & Light will let contracts for a $30-million project on the Upper Baker River.

Industrial building in the Far West, is off to a boom start this year and the pace is expected to continue for the next six months with aircraft expansion programs a major factor in Seattle, Los Angeles, and San Francisco. The mushrooming electronics industry is also sparking industrial building in Los Angeles and industrial parks are gaining popularity in the San Francisco Bay area. Expansion of pulp, paper and plywood production represents the biggest private capital expenditure now under way in Oregon.

Department stores and shopping centers are enjoying a boom in the Far West.

Seattle also is looking for an unusually large volume of office building. San Francisco has a serious shortage of office space and some big projects are planned (including the $40-million Kaiser Center), but the earthquake standards make skyscraper construction more expensive than in some other areas. Suburban bank, office and church construction also is active.

Schoolbuilding in the Far West will match or exceed the volume of awards in the first half when this type of construction was at an all-time peak. One of the largest city programs to be started is in Oakland, Calif., where voters approved a $40-million school building issue in June.

California, Oregon and Washington are mapping big roadbuilding programs. Washington's highway work is setting a record. It will continue strong for the rest of the year. In Oregon, highway construction will shoot ahead as soon as federal money is allocated. Officials there hope to get some $15 million in work under contract by August. The California Division of Highways will do about $100 million worth of work with federal funds representing only a small portion of the total. As part of this, the state hopes to let contract for $34 million worth of work in the Los Angeles area before the end of the year, with the bulk of the money going for freeways.

Water supply gives a boost to public works prospects for the next six months in Los Angeles. The Metropolitan Water District plans to award contracts totaling $50 million in the July to December period. And, more than $16 million in contracts for Los Angeles' expansion of its Hyperion sewage treatment plant should reach the bid stage by fall.

Washington expects a large volume of sewer, water and gas line work. In Seattle alone, bids probably will be asked in the next six months on the first units of sewage projects totaling $6 million.

Labor Looks at Automation

Novel and drastic changes in collective bargaining demands, management policies, social legislation and educational planning may be essential to the orderly introduction of automation, if the new technology is to achieve its vast potential "with a minimum of social dislocation and human suffering," according to the AFL-CIO.

In a pamphlet called "Labor Looks at Automation," the new federation sees in automation the seeds of higher productivity, greater "economic abundance," higher living standards—and untold harm to millions of people unless labor, management and government work together to solve the problems it presents. The purpose of the pamphlet is "to help gain more informed attention as to the nature and implications of automation."

Although this new technology is loosely defined by many, the AFL-CIO adheres to the basic concept of feedback control—or automatic correction—where mechanical and electronic devices, rather than human workers, are used to regulate and control the operation of machines, producing radical changes in production methods, office procedures and labor skills. Examples cited include the common thermostat, Minneapolis-Honeywell's precision boring machine, Sundstrand Machine Tool's automatic lathe, General Electric's Univac, the Bank of America's electronic computer and American Airline's magnetronic reservisor.

Areas of impact, under the AFL-CIO analysis, range from the national economy as a whole—where the nation's ability to consume must keep pace with its ability to produce—to the individual worker who is displaced, from the nation's industries to its capital investors.

While labor "welcomes" automation, President Meany suggests that the "collective bargaining process must be utilized to work out the necessary arrangements for introducing the new machinery and equipment, for reviewing the wage structure and job classifications that might be affected, and for making certain that the benefits flowing from the new technology are shared fully with the workers."

Corrective and protective measures now being discussed as possible candidates for inclusion in labor contracts embrace "substantial" wage increases; a shorter workweek (perhaps four days); new severance pay provisions and extension of guaranteed wage plans; changes in lay-off, rehire, transfer and promotion provisions; new job classification procedures; retraining programs at employer expense; longer vacation periods; and pension plans designed for earlier retirement. And on the legislative front, relocation allowances and drastic improvements in unemployment compensation may be sought.

Although labor admits it doesn't know all the answers, the AFL-CIO warns that the problems that follow in the wake of automation "require responsible consideration by all segments of our society."

UA and Apprentices

Program wins support as annual contest is planned

The plumbers union, which recently broadened support of an apprenticeship program through an agreement with the National Constructors Association, and cooperating contractor associations, has set in motion the chain of events that will culminate in the Third Annual International Apprentice Contest for Plumbing and Pipefitting. The contest will be held at Purdue University, Lafayette, Ind., during the period of August 6-10.

Contest rules have been published and the time-table established for local and state or provincial contests, the winners of which will be participants in the international contests. Contests on the local and state levels must be completed by this week. Eligible participants are fifth year apprentices.

The two contests are supported by the Joint Plumbing and Joint Pipe Fitting Apprentice Contest Committees, representing the National Association of Plumbing Contractors; Heating, Piping and Air Conditioning Contractors National Association; National Association of Master Plumbers and Heating Contractors of Canada; and United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the U. S. and Canada.

Based on the results of four days of testing, both written and performance, three international winners will be selected for each of the two trades. First place awards will be worth $1,000 to the winners.

UA's agreement with the National Constructors Association, concluded last spring, sets up an educational trust fund, which will contribute to the support of approved programs for the training of journeymen and apprentices in the plumbing and pipe fitting industry. NCA members will contribute to the trust at the rate of one cent for each hour worked by their UA employees, effective as of April 1, 1956.

Safety Conference Planned To Promote Wider Interest

New York's Gov. Harriman will soon appoint an advisory committee to plan a statewide conference in the fall on worker safety.

The action represents another effort on the part of state officials to promote on-the-job safety and to curb industrial accidents. Official estimates place the number of injuries reported daily to the state's Workmen's Compensation Board at more than 3,000, representing an annual economic loss of $750 million.

Gov. Harriman said he hopes the conference will "stimulate widespread interest and positive action."

The State Labor Department, meanwhile, has launched a new safety program designed to sell safety to management and to enlist the cooperation of workers. Consulting and advisory service will be combined with inspection and enforcement procedures in the new drive.

Widow Gets Helping Hand From Riggers and Lather

Members of Local 575, riggers and machinery erectors in Michigan, entered the homebuilding field last month, when they pitched in to complete the home started by Robert Koppen, a member of the local who fell to his death while working on the Mackinac Bridge.

After the accident, Local 5 of the lathers union furnished, without charge to the widow, two men to finish the interior walls.

Now, the riggers, who have raised a $1,000 fund for the Koppen family, are also purchasing the necessary materials, including a furnace, and are contributing four weekends of work to complete the house in keeping with their own tradition of "we take care of our own."

Right-to-Work Laws

Issue gains momentum as Gov. Long signs repeal

Gov. Earl K. Long has signed the Louisiana bill repealing the state's right to-work law, passed in 1954, leaving similar laws in 17 other states.

This is the first time such a repealer has been passed since 1947 and the action has sparked new interest in the controversial issue as a significant factor in the November elections.

Elimination of right-to-work laws has long been a goal of organized labor, including the building trades. States in which the issue is particularly active are Montana, Louisiana, Washington and California. Defeat of Iowa's existing law is listed as one of the primary goals of the state's newly-merged labor federation. The AFL-CIO Washington, D. C., headquarters has made available to affiliates a sound film in color explaining what the issue involves. And the AFL-CIO Committee on Political Education is sending to all rank-and-file members a four-page pamphlet explaining 21 political issues and showing Congressional voting records on a state-by-state basis.

Commenting on the Louisiana repeal, the "AFL-CIO News" said: "The issue will be hard-fought in legislatures and in popular referendums. It will inevitably involve candidates for state office who must stand up and be counted. It will involve Congressional candidates."

Michigan Jobless Benefits May Not Be Liberalized

Michigan's state legislature adjourned until July 17 without taking action on a proposed liberalization of the state's unemployment insurance law.

Governor Williams had urged that weekly benefits be boosted from the present maximum of $54 to a possible $86, and that the payment period be extended from 26 to 39 weeks.

The adjournment was taken in order to give the proposal further study, but chances of favorable action are slim. Said the House Labor Committee: "The governor's program completely disregards the needs of unemployed workers, would eliminate the incentive to work and would be a drain on our economic resources . . . viewed as a whole, the Reuther-Williams program is unsound, unrealistic, irresponsible and politically inspired."

(*Labor continued on page 112*)

Now You Can Set Blind Rivets With This New Townsend Drill Attachment!

The versatility, positive action, ease of handling and maintenance-free service you get with this new Townsend drill attachment for setting blind rivets brings increased efficiency to your production lines. Its use will help cut unit costs and reduce equipment inventory.

The new G-80 drill attachment is designed for use with either an electric or pneumatic powered drill which provides new flexibility of operation. It is now possible for any fabricator to set all lengths and diameters of aluminum, steel and monel Cherry rivets and Townsend blind rivets with only one tool.

Townsend engineers will work with your technical staff to demonstrate how the G-80 gun and blind rivets can be used in many fabricating operations. These include application of roofing and siding material in building construction—the assembly of components of air conditioning equipment, home appliances, electronic equipment, awnings, jalousies, screens, storm doors, signs and windows.

You will see how one man can install this tamper-proof, vibration-resistant blind rivet in a split second. Townsend blind rivets provide high clinch and a strong fastening method for many applications that otherwise would be slow and expensive. For information on the G-80 gun and blind rivets, write Townsend Company, P.O. Box 237B, New Brighton, Pa.

Townsend

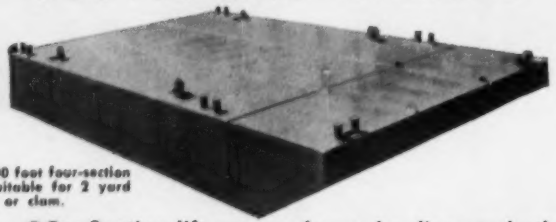
COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

MANITOWOC
SECTIONAL BARGES



A 50 x 30 foot four-section barge suitable for 2 yard dragline or clam.

● For floating lift cranes, clams, draglines and other contrators' equipment. Easily assembled or knocked down for transporting by rail or highway.

Length of sections from 20 to 50 feet in 10-foot increments.

Spuds, deck fittings, loading ramps and other accessories available.

Loading a 40-foot section for highway transportation.

MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WISCONSIN

Write for information and prices.

Sold direct or through Manitowoc Engineering Corp. distributors.

Sound Powered TELEPHONES work in any emergency

because they NEED NO CURRENT

If everything else fails, these phones will still provide trouble-free performance over a distance of many miles. Speaking is activated solely by the sound energy of the voice while ringing is accomplished by a hand-driven magneto. For permanent installation on industrial projects or for temporary use on construction work where they can be moved as the job progresses.

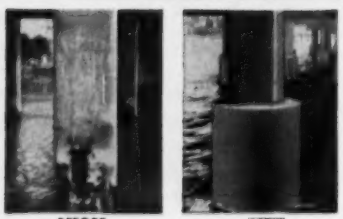
INDOOR AND OUTDOOR MODELS

In selective or common ringing and semi-selective or common talking. Cost of upkeep is negligible.

Write for illustrated catalog

HOSE-McCANN TELEPHONE CO., INC.
761 THIRD AVENUE
BROOKLYN 32, N. Y.

For Bridges and Piers



BEFORE AFTER

8 Advantages of DRI-POR® for Pile Repairs

- Removal of all decayed concrete
- Welding of replaced reinforcing
- No contamination of pile repair
- No expensive diving procedures
- Leakproof, watertight forms
- No tremie or grouting required
- Visual inspection by inspector
- Control of repair at all times

Write for information and estimates

DRI-POR SYSTEMS
Baltimore 26, Md.

Asks Tax Reduction

AFL-CIO would close the loopholes, up exemptions

Federal income tax relief to low- and middle-income taxpayers, coupled with the closing of loopholes beneficial to the wealthy, has been urged by the AFL-CIO in its current issue of "Labor's Economic Review."

Its reasons are twofold: (1) Our tax system has lost its progressive structure, with the result that "low-income taxpayers, who pay nearly the rate established in the law, are discriminated against, because high-income taxpayers pay much less than the rates written into the law"; and (2) the purchasing power of the bulk of American taxpayers must be increased to support an expanding economy.

The tax cut recommended by the AFL-CIO would amount to $3 billion a year. It would be effected by an increase of $100 in exemptions or by reducing the tax rate applicable to the first $1,000 of taxable income from 20% to 15%. The loss of revenue would be offset by $9 billion gained through the closing of loopholes.

Areas of loopholes or special concessions, which the AFL-CIO would eliminate or modify, are the dividends received, credit and the capital gains, family partnership, stock option, depletion, depreciation, and split-income provisions. It would subject dividend and interest payments to withholding and would eliminate the marital deduction and life-estate principles in the federal gift and estate tax laws.

A progressive tax structure, says the AFL-CIO, is based on the proposition that the wealthy can afford to pay higher taxes without sacrificing their wellbeing—the greater the income, the higher the tax; the smaller the income, the lower the tax. "Ability to pay," the federation suggests, "should be the yardstick."

Labor Briefs . . .

• **Safety**—Montana's State Industrial Accident Board has named a five-man advisory committee to draft a safety code for the construction industry, both heavy and building.

• **Hot-cargo**—Hot-cargo clauses—still a legal enigma—have again come before the Interstate Commerce Commission in a Texas case questioning the right of a common carrier to comply with such provisions. Teamsters have requested the right to intervene—an adverse ruling could sterilize the clause.

TRACTIVE POWER *PLUS* DUO-PACTION *PROVED* with the DUO-PACTOR

Tractive power *plus* was proved by this contractor on his Mitchell Field Airport job here in Milwaukee, Wis., towing a fully loaded 8-ton pull-type pneumatic tired roller behind his fully ballasted 19 ton DUO-PACTOR, thus nearly completing compaction in one pass. Tests proved Duo-Paction method exceeded compaction specifications with less rolling time. Test ran from 99.7% to 102.1% of proctor.

DUO-PACTION is the process of rolling alternately with steel and rubber, producing greater densities and smoother surfaces.

DUO-PACTOR with its large diameter power roll tires provides the necessary traction in loose materials. The rear trailing roll tires being smaller and unequally spaced prevent direct tracking. The 8 rear tires are spring-mounted in pairs, torsionally controlled, which means a more uniform transverse density obtained because the most pressure is applied to the highest point. After preliminary pneumatic-tired rolling, the steel roll is lowered to press down the ridges and level the surface for finish pneumatic rolling.

INTERNATIONAL Model "300" utility tractor with torque amplifier speeds up work by giving you added power-punch to handle tough spots on-the-go . . . by giving you a choice of two speeds in each gear to utilize full power for maximum capacity.

SEAMAN • GUNNISON Corporation

Milwaukee General Offices: 2763 S. 27th Street • Milwaukee 15, Wisconsin

Manufacturers of the Duo-Pactor, Swing-Bar Distributors and Hydro-Jet Flushers.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: July 26, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 26th day of July 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Fulton (Rte. 146)	FARC 56-52	Gloversville-Mayfield, S.H. 33 Project U-F-419(7)	2.43	Asp. Conc., Opt.	$23,000 Plans $15	$416,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Niagara Rte. 31)	FATC 56-2	City of Lockport: Genesee St. & Walnut St. FAC 52-11, FAC 54-10 Project U-709(6)	1.21	Traffic Signal System	$2,200 Plans $10	41,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 W. Main St., Hornell, N. Y.						
Steuben (Rte. 15)	FARC 56-49	Painted Post-Campbell, S.H. 5211 Campbell-Bath, S.H. 5224 Project F-225(10)	4.30	Asp. Conc., Opt.	$20,000 Plans $10	363,000
Steuben (Rte. 36)	FARC 56-50	Arkport-Dansville, S.H. 5352-B & 5352 Project F-579(4)	3.41	Asp. Conc., Opt.	$12,000 Plans $10	225,000
Steuben (Rte. 17 & 36)	FARC 56-51	Troupsburg Center-Jasper, Pt. 2, S.H. 8154 Canisteo-Jasper, S.H. 5348-B and Jasper-Addison, S.H. 5253E Project F-442(6); F-1115(1)	3.15	Asp. Conc., Opt.	$12,000 Plans $10	203,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
St. Lawrence (Rte. 37)	FATC 56-1	Massena South Side Route, Pt. 1, FASH 55-13 (37-2-27) Massena South Side Route, Pt. 2, FASH 55-7 Massena-Helena, Pt. 1, S.H. 1261 Project U-580(11)	5.13	Traffic Signal System	$3,500 Plans $10	64,000
St. Lawrence (Rte. 37B)	FASSH 56-4	Village of Massena: Center St.-Parker St. Bridge & Interchange (37-2-27.8) Project US-467(1)	0.64 (0.60) (Acc.)	Asp. Conc., Opt. Bridge Welded Plate Girder 840'	$110,000 Plans $25	2,060,000
DISTRICT No. 8, K. G. Rauer, Acting District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess	BA 56-2P	East Approach: Kingston-Rhinecliff Bridge (Cont. 8)	1.35	9" Cem. Conc. Pavt. 24'-36' Wide = 1.14 Mi. Asp. Conc. Opt. = 0.21 Mi.	$9,000 Plans $10	175,000
Rockland (Rte. 9W)	RC 56-27	Tompkins Cove-West Haverstraw, S.H. 8049	0.18	Cem. Conc. Sidewalks & Curbs	$700 Plans $10	13,000
Ulster	BA 56-1P	West Approach: Kingston-Rhinecliff Bridge (Cont. 6)	0.31	9" Cem. Conc. Pavt. 36'-68' Wide	$5,600 Plans $10	102,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, N. Y.						
Broome (Rte. 17)	FARC 56-48	Windsor-Deposit, S.H. 5338 Project F-344(21)	5.80	Asp. Conc., Opt.	$20,000 Plans $10	364,000
DISTRICT No. 10, M. E. Gout, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Bronx	FAMDE 56-1	Major Deegan Expressway & Extension Cont. 18 Project U-1082(22)	7.33	Landscaping and Misc. Work	$20,000 Plans $15	360,000
Kings	FAPE 56-1	Prospect Expressway Cont. 3A Project U-1081(2)	0.78 (1.63) (Acc.)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide = 1.13 Mi. Sheet Asph. Pavt. = 1.15 Mi. Misc. Work = 0.13 Mi. 3 Hwy. Seps. Steel Girders 114.7', 107.6', & 135.5' 1 Ped. Overpass Steel Girder 159.7'	$310,000 Plans $100	5,536,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: August 21, 1956

Port of New Orleans

ADVERTISEMENT

Sealed bids will be received by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until Tuesday, August 21, 1956, at 2:00 o'clock P. M., and then publicly opened for furnishing approximately 11,400 tons of steel H-beam bearing piles.

Deposit of three per cent of the sum bid, by certified check only, certified by an accredited officer of an accredited bank, is required with each bid.

A surety bond, in acceptable surety company, for fifty per cent of the amount of the contract, is required with notarial contract.

Specifications and bid forms are on file in the Board's office mentioned above. Complete sets will be furnished to prospective bidders on application.

The right is reserved to accept or reject any or all bids and to waive informalities, and to award a contract or contracts as the Board may determine to be for its best interests.

Bids: July 23, 1956

City of Wellsville, Missouri

ADVERTISEMENT FOR BIDS

Sealed bids for the construction of two pneumatic sewage lift stations and a sewage lagoon (all earthwork) will be received by the City of Wellsville, Missouri, at the office of the City Clerk until 7:30 P. M. central standard time, on the 23 day of July, 1956, at which time and place the bids will be publicly opened and read aloud. Bids received after said time will be returned unopened.

Copies of the plans and specifications and other contract documents are on file at the office of the City Clerk and at the office of WILLIAMSON AND ASSOCIATES, Consulting Engineers, 6731 Manchester Avenue, St. Louis 10, Missouri.

Copies of the plans and specifications may be obtained from the Consulting Engineers upon deposit of Twenty Dollars ($20.00) for each set. Ten Dollars ($10.00) whereof will be refunded upon returning the set in good condition five days after the date set for receipt of bids.

Character and amount of security to be furnished by each bidder are stated in the above mentioned documents. No bid may be withdrawn within thirty (30) calendar days from the scheduled closing time for receipt of bids. The City of Wellsville reserves the unqualified right to reject any or all bids and to waive any irregularities therein.

CITY OF WELLSVILLE, MISSOURI

Bids: July 25, 1956

Port Everglades, Florida

BROWARD COUNTY PORT AUTHORITY, FLORIDA

Concrete and Steel Bulkhead Wall

Sealed bids will be received until 7:30 P.M., E.S.T., July 25, 1956, for furnishing all materials except steel sheet piling, all labor, equipment, tools, etc. and constructing a concrete and steel bulkhead wall along Pier 4 at Port Everglades, Florida, with an overall length of 1,200 linear feet for the base bid, and alternate extensions up to a total length of 1,550 linear feet. For particulars address R. T. Spangler, Port Manager, Port Everglades Station, Fort Lauderdale, Florida.

Bids: July 25, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 25th day of July 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

Contract No. 193. For the construction of the base course and paving of a north and a south access road to the Turnpike adjacent to the Crove Valley Service Station and Restaurant Area; plus the construction of the base and surface course paving of Township Road 428 between the intersections of the proposed access roads.

This work commences approximately 1,451 lineal feet east of the intersection of Township Road 428 with the centerline of the Turnpike in Taylor Township, Fulton County and extends thence in a westerly direction to a point approximately 100 lineal feet west of the above mentioned intersection in Taylor Township, Fulton County, a distance of approximately 0.29 miles.

The approximate quantities of the principal items are as follows:

4,670 Sq. Yds. Subgrade
2,408 Lin. Ft. Shoulders (Side Road)
4,670 Sq. Yds. 8" Crushed Aggregate Base Course, Type B
4,313 Sq. Yds. 2¼" Bituminous Surface Course, ID-2

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 6 July 1956, at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, and at the Everett Maintenance Building, Everett, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon payment of ten ($10.00) dollars for each set. Copies of the Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy. No refund will be made for plans or contract documents returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
John F. Byrne
Secretary and Treasurer

Harrisburg, Pennsylvania
28 June 1956

Bids: July 26, 1956

New Jersey Turnpike Authority

CONTRACTS NOS. N-62A, N-62B, N-62C, N-62D, N-62E

Sealed proposals are invited for Contracts Nos. N-62A, N-62B, N-62C, N-62D and N-62E for the construction of the Maintenance Building at Maintenance 7-Caven Point, on the Newark Bay-Hudson County Extension of the New Jersey Turnpike, Jersey City, New Jersey, as follows:

Contract No. N-62A—General Construction
Contract No. N-62B—Structural Steel & Miscellaneous Iron Work
Contract No. N-62C—Plumbing
Contract No. N-62D—Heating and Ventilation
Contract No. N-62E—Electrical

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Daylight Saving Time, on the morning of July 26, 1956, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 6, 1956, at the office of the Authority, and at the office of the Consulting Architects, Lorimer and Rose, 254 West 54th Street, New York 19, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 6, 1956

Bids: July 25, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:15 a. m., Eastern Daylight Saving Time, the 25th day of July 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

Contract No. 189. The project consists of raising the grade line to eliminate irregularities due to settlement; by constructing on the existing pavement a crushed stone base course, surfaced with a bituminous mixture, conforming to the specifications and to the thickness and widths shown on the plans or as directed by the Engineer.

Beginning at a point approximately 9,059 lineal feet east of the intersection of the center line of Legislative Route 37006 with the center line of the Turnpike in Little Beaver Township, Lawrence County and extending thence in a westerly direction to a point approximately 3,749 lineal feet east of the above mentioned intersection; said point also being in Little Beaver Township, Lawrence County, a total distance of 1.01 miles. This mileage is from the beginning to the ending of work, however, the work is concentrated 0.33 miles within these limits.

The approximate quantities of the principal items are as follows:

123 Cy. Yds. Class 1 Excavation
1,350 Lin. Ft. Shoulders and Medial
2,358 Tons Crushed Stone Base Course, No. 4 Stone
1,078 Tons Screenings No. 1
5,515 Sq. Yds. ID-2 Bituminous Surface Course (3")
2,133 Sq. Yds. ID-2 Bituminous Wearing Course (1")
1,500 Sq. Yds. DL-2 or DL-3 Medial Surface Treatment
1,228 Gals. DL-2 or DL-3 Seal for Crushed Stone Base Course

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 6 July 1956, at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, and at the Everett Maintenance Building, Everett, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon payment of ten ($10.00) dollars for each set. Copies of the Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy. No refund will be made for plans or contract documents returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
John F. Byrne
Secretary and Treasurer

Harrisburg, Pennsylvania
28 June 1956

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4730) will be received at Kanab, Utah, until August 15, 1956, for furnishing labor and materials for Earthwork and Culverts for Access Highway, Station 158+67.7 to Station 400+00, Glen Canyon Dam, Colorado River Storage Project, Arizona and Utah. Location Navajo Indian Reservation, in Coconino County, Arizona. Principal items are 890,000 cu. yds. excavation; 2,800 lin. feet corrugated metal pipe; and other work. Completion time 280 days. For particulars, address Bureau of Reclamation, Kanab, Utah; or Building 52, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: July 26, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 26th day of July 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: ROCKLAND COUNTY, Kurt G. Rauer, Act'g. Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.

Contract No.	Type	Name of Highway and Miles	Deposit for Plans	Bid Deposit	Department Estimate
T.A.G.S. 56-28	9" Cem. Conc. Pavt. 2 at 25' Var.; Asp. Conc. Opt.; 6 Hy. Seps. Prestressed Concrete Stringers 280.9', 294.0', 112.5', 126', 216.5', & 244.3'; 2 Hy. Seps. Widen & Extend Exist. Comp. I-Beams 144.8' & 208.3'	NYS Thruway Hudson Sec., Sub. 8A (Connection to Garden State Parkway) & 3 Secondary Rds. 2.764 Thy. 3.633 Ramps 0.463 Acc. Miles	$100	$266,000	$5,303,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: July 23, 1956

Contract O & M—353

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
BREWSTER HANGAR
SKYLIGHT DEMOLITION AND REROOFING

Sealed proposals for furnishing all labor, material and equipment for demolishing six skylights and making roof repairs at the Brewster Hangar at Newark Airport, New Jersey, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11:00 A.M., Monday, July 23, 1956, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 12, 1956

Bids: August 7, 1956

Contract NYA-650.007

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL TERMINAL AREA
PARKING FIELDS

Sealed proposals for the construction of paving and the furnishing and installation of utilities for the Parking Fields in the Central Terminal Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, August 7, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 12, 1956

Bids: July 24, 1956

Contract PN-340.003

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
Buildings Nos. 290, 291, 292 and Wharf
Demolition of Buildings, Sand Drains and Surcharge Fill

Sealed proposals for the demolition of portions of several buildings, installation of sand drains and placing of surcharge fill for cargo terminal buildings 290, 291, 292 and wharf to be constructed on the North side of City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 24, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 12, 1956

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4728) will be received at Medford, Oregon, until August 22, 1956, for furnishing labor and materials for Main Canal Structures, Station 123+00 to Station 829+00, Medford and Rogue River Valley Irrigation District, Rogue River Basin Project, Oregon. Location northeast of Medford, Oregon. Principal items are 350 cu. yds. excavation for flumes and wall; 200 cu. yds. concrete for flumes and wall; constructing 60-inch concrete siphon, about 350 feet long; constructing 54-inch concrete siphon, about 1,100 feet long; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 629, Medford, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

Bids: August 15, 1956

Republic of Liberia

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
DIVISION OF HIGHWAYS

MONROVIA

STANDARD GOVERNMENT FORM OF INVITATION FOR BIDS
FORM NO. 20

SEALED BIDS, in single copy only, subject to the conditions contained herein, will be received until 11 o'clock A.M., Monrovia time, on the 15th day of August 1956, and then publicly opened at that time, at the office of the Secretary of the Department of Public Works and Utilities, for furnishing the materials and performing the work for constructing the Liberia, Gbarnga—Kallahun Projects SH 1-B(2), SH 1-C, SH 1-D and SH 1-E. Telegraphic bids will not be accepted. Bids received after the above time and date will not be considered. The combined length of the Projects is approximately 144.6 miles, and the items of work are approximately as follows:

Project SH 1-B(2)

Item No.	Item	Quantity	Unit
20(1)	Clearing and Grubbing	5	Acres
24(1)	Unclassified Excavation	22,000	Cu. Yds.
25(1)	Unclassified Excavation for Structures	325	Cu. Yds.
27(2)	Overhaul on Uncl. Exeavation (1000' F.H.)	10,000	Sta. Yds.
28(2)	Overhaul on Select Borrow Surf. Crs. (1000' F.H.)	5,000	Cu. Yd. Mi.
30(1)	Foundation Fill	150	Cu. Yds.
37(1)	Furrow Ditches	1,000	Lin. Ft.
100(1)	Select Borrow Surface Course (Laterite)	1,600	Cu. Yds.
206(1)	Class "A" Concrete	845	Cu. Yds.
206(2)	Class "B" Concrete	60	Cu. Yds.
206A(5)	Class "Y" Concrete	16	Cu. Yds.
207(1)	Reinforcing Steel	167,000	Lbs.
220(1)	Structural Steel	213,000	Lbs.
249(1)	Concrete Block Masonry Headwalls	8	Cu. Yds.
250(3)	24" Standard Str. Reinf. Concrete Pipe	42	Lin. Ft.
250(4)	30" Standard Str. Reinf. Concrete Pipe	60	Lin. Ft.
250(5)	36" Standard Str. Reinf. Concrete Pipe	60	Lin. Ft.
255A(3)	24" Bituminous coated corr. sheet metal Culvert Pipe, Type 2, Nestable	42	Lin. Ft.
255A(4)	30" Bituminous coated corr. sheet metal Culvert Pipe, Type 2, Nestable	60	Lin. Ft.
255A(5)	36" Bituminous coated corr. sheet metal Culvert Pipe, Type 2, Nestable	60	Lin. Ft.
310(1)	Loose Rip Rap	800	Cu. Yds.
Extra Work:	Stone Ditch checks, planting grass, etc	Lump Sum	

Project SH 1-C

20(1)	Clearing and Grubbing	385	Acres
24(1)	Unclassified Excavation	940,000	Cu. Yds.
25(1)	Unclassified Excavation for Structures	8,500	Cu. Yds.
27(2)	Overhaul on Uncl. Excavation (1000' F.H.)	263,000	Sta. Yds.
28(2)	Overhaul on Select Borr. Surf. Crs. (1000' F.H.)	400,000	Cu. Yds. Mi.
30(1)	Foundation Fill	3,000	Cu. Yds.
37(1)	Furrow Ditches	62,500	Lin. Ft.
100(1)	Select Borrow Surface Course (Laterite)	143,000	Cu. Yds.
206(1)	Class "A" Concrete	4,500	Cu. Yds.
206(2)	Class "B" Concrete	90	Cu. Yds.
206A(5)	Class "Y" Concrete	10	Cu. Yds.
207(1)	Reinforcing Steel	510,000	Lbs.
249(1)	Concrete Block Masonry Headwalls	660	Cu. Yds.
250(1)	15" Standard Reinf. Conc. Pipe Culvert	480	Lin. Ft.
250(2)	18" Standard Reinf. Conc. Pipe Culvert	600	Lin. Ft.
250(3)	24" Standard Reinf. Conc. Pipe Culvert	1,104	Lin. Ft.
250(4)	30" Standard Reinf. Conc. Pipe Culvert	5,721	Lin. Ft.
250(5)	36" Standard Reinf. Conc. Pipe Culvert	2,649	Lin. Ft.
250(6)	48" Standard Reinf. Conc. Pipe Culvert	3,876	Lin. Ft.
250(7)	60" Standard Reinf. Conc. Pipe Culvert	162	Lin. Ft.
255A(1)	15" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	480	Lin. Ft.
255A(2)	18" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	600	Lin. Ft.
255A(3)	24" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	1,104	Lin. Ft.
255A(4)	30" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	5,721	Lin. Ft.
255A(5)	36" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	2,649	Lin. Ft.
255A(6)	48" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	3,876	Lin. Ft.
255A(7)	60" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	162	Lin. Ft.
310(1)	"Loose Rip Rap"	700	Cu. Yds.
Extra Work:	Stone Ditch checks, Planting grass on Embankment Slopes, etc	Lump Sum	

Project SH 1-D

20(1)	Clearing and Grubbing	400	Acres
24(1)	Unclassified Excavation	1,110,000	Cu. Yds.
25(1)	Unclassified Excavation for Structures	9,000	Cu. Yds.
27(2)	Overhaul on Uncl. Excav. (1000' F.H.)	263,000	Sta. Yds.
28(2)	Overhaul on Select Borrow Surf. Crs (1000' F.H.)	400,000	Cu. Yd. Mi.
30(1)	Foundation Fill	3,000	Cu. Yds.
37(1)	Furrow Ditches	62,000	Lin. Ft.
100(1)	Select Borrow Surface Course	143,000	Cu. Yds.
206(1)	Class "A" Concrete	4,350	Cu. Yds.
206(2)	Class "B" Concrete	200	Cu. Yds.
206A(5)	Class "Y" Concrete	35	Cu. Yds.
207(1)	Reinforcing Steel	565,000	Lbs.
249(1)	Concrete Block Masonry Headwalls	525	Cu. Yds.
250(1)	15" Standard Str. Reinf. Conc. Culvert Pipe	300	Lin. Ft.
250(2)	18" Standard Str. Reinf. Conc. Culvert Pipe	600	Lin. Ft.
250(3)	24" Standard Str. Reinf. Conc. Culvert Pipe	1,080	Lin. Ft.
250(4)	30" Standard Str. Reinf. Conc. Culvert Pipe	3,330	Lin. Ft.
250(5)	36" Standard Str. Reinf. Conc. Culvert Pipe	2,660	Lin. Ft.
250(6)	48" Standard Str. Reinf. Conc. Culvert Pipe	4,590	Lin. Ft.
255A(1)	15" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	300	Lin. Ft.
255A(2)	18" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	600	Lin. Ft.
255A(3)	24" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	1,080	Lin. Ft.
255A(4)	30" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	3,300	Lin. Ft.
255A(5)	36" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	2,660	Lin. Ft.
255A(6)	48" Bituminous coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	4,590	Lin. Ft.
310(1)	"Loose Rip Rap"	900	Cu. Yds.
Extra Work:	Stone Ditch checks, Planting grass on Embankment Slopes, etc	Lump Sum	
Special Provisions:	Construct Ferry at Loffa River	Lump Sum	

Project SH 1-E

20(1)	Clearing and Grubbing	420	Acres
24(1)	Unclassified Excavation	1,200,000	Cu. Yds.
25(1)	Unclassified Excavation for Structures	9,500	Cu. Yds.
27(2)	Overhaul on Uncl. Excav. (1000' Free Haul)	263,000	Sta. Yds.
28(2)	Overhaul on Select Bor. Surf. Crs. (1000' F.H.)	400,000	Cu. Yd. Mi.
30(1)	Foundation Fill	3,500	Cu. Yds.
37(1)	Furrow Ditches	62,500	Lin. Ft.
100(1)	Select Borrow Surface Course	150,000	Cu. Yds.
206(1)	Class "A" Concrete	3,100	Cu. Yds.
206(2)	Class "B" Concrete	200	Cu. Yds.
206A(5)	Class "Y" Concrete	35	Cu. Yds.
207(1)	Reinforcing Steel	450,000	Lbs.
249(1)	Concrete Block Masonry Headwalls	600	Cu. Yds.
250(1)	15" Standard Str. Reinf. Conc. Pipe Culvert	480	Lin. Ft.
250(2)	18" Standard Str. Reinf. Conc. Pipe Culvert	600	Lin. Ft.
250(3)	24" Standard Str. Reinf. Conc. Pipe Culvert	1,100	Lin. Ft.
250(4)	30" Standard Str. Reinf. Conc. Pipe Culvert	5,175	Lin. Ft.
250(5)	36" Standard Str. Reinf. Conc. Pipe Culvert	2,800	Lin. Ft.
250(6)	48" Standard Str. Reinf. Conc. Pipe Culvert	4,600	Lin. Ft.
250(7)	60" Standard Str. Reinf. Conc. Pipe Culvert	150	Lin. Ft.
255A(1)	15" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	480	Lin. Ft.
255A(2)	18" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	600	Lin. Ft.
255A(3)	24" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	1,100	Lin. Ft.
255A(4)	30" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	5,175	Lin. Ft.
255A(5)	36" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	2,800	Lin. Ft.
255A(6)	48" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	4,600	Lin. Ft.
255A(7)	60" Bituminous Coated Corr. Sheet Metal Culvert Pipe, Type 2, Nestable	150	Lin. Ft.
310(1)	Loose Rip Rap	800	Cu. Yds.
Extra Work:	Stone Ditch checks, Planting grass on Embankment Slopes, etc	Lump Sum	

The Government will permit the contractor to import duty free, any supplies or materials incorporated in the work, or equipment used on the work. The contractor will furnish all equipment necessary for construction of the work and all materials and supplies incorporated in the work unless specific mention is made to the contrary in the Special Provisions or Invitation for Bids. Supplies or materials not of Liberia or United States origin or manufacture shall not be used on this project without the written consent of the Secretary of the Department of Public Works and Utilities.

Preference of employment in all categories shall be given to qualified Liberian and United States citizens, but only Liberian citizens may be employed as Unskilled Labor, except upon written permission of the Secretary of the Department of Public Works and Utilities. Only Bids from qualified Liberian or United States firms or entities presently incorporated in, or licensed to operate in, either country will be considered. Bidders' attention is called to Article 13 "Officials Not To Benefit"; Article 17, "Domestic Preference"; and Article 22, "Preference of Employment", of the Contract and Proposal.

Competency of Bidders shall be indicated by the submission at the earliest possible date prior to submission of bids of the Attested Statements and Questionnaires prescribed in Article 2.6 of "Specifications FP-41". These forms will be furnished with the Proposals.

The plans, specifications, special provisions, and Pre-qualification Questionaires may be obtained at the Department of Public Works and Utilities, Office of the Chief Engineer, Monrovia, R. L., and will also be available for examination at the Liberian Embassy and the Bureau of Public Roads in Washington, D. C. U. S. A. When copies of plans and specifications are requested, a deposit of $100.00 (cash or certified check) will be required to insure their return. If these are not returned with in (15) fifteen days after opening of bids the deposit will be forfeited to the Government. Certified checks should be made upon a Monrovia Bank or reputable firm approved by the Secretary of the Department of Public Works and Utilities, and payable to the Bureau of Revenues, Republic of Liberia.

Performance of the contract shall begin within (60) sixty Calendar days after the date of the Notice to Proceed and the contract shall be completed within 720 calendar days, subject to such extensions as may be authorized by the terms of Article 8.6 of "Specifications FP-41". Contract time will begin (60) sixty days after the Notice to Proceed and will run concurrently on Projects SH 1-B(2), SH 1-C, and SH 1-D.

Notice to Proceed on Project SH 1-E shall be given within (60) sixty days of the estimated time of completion of grading plans, and contract time will begin (60) sixty days after the Notice to Proceed. Contract time for Project SH 1-E shall be 360 calendar days, subject to such extensions as may be authorized by the terms of Article 8.6 of "Specifications FP-41".

A Bid Bond, or cash, or negotiable check payable to the Republic of Liberia, in the amount of 5% of the amount of the bid must accompany the Bid, otherwise the Bid will not be considered. This security will be returned upon award to the contractor. Performance and payment Bonds, each in the amount of 20% of the Bid Amount will be required.

Liquidated damages for delay will be as set forth in Article 8.7 of "Specifications FP-41," as modified by the Special Provisions. Partial payments will be made as set forth in Article 9.6 of "Specifications FP-41." No partial payments will be made, however, when the amount due is less than $500.

The right is reserved, as the interests of the Government may require, to reject any and all bids, and to waive any informality in bids received.

Envelopes containing bids must be sealed, marked and addressed as follows:

BID FOR CONSTRUCTION
Liberia, Saint Paul River-Kallahun, Projects SH 1-B(2), SH 1-C SH 1-D and SH 1-E.

The Honorable
The Secretary of Public Works and Utilities
Department of Public Works and Utilities
Monrovia, Liberia.

NOTE: See copies of Standard Government Instructions to Bidders, Standard Government Form of Contract, which are part of this Proposal and Contract.
In the interest of uniformity, bidders are required to complete the forms provided in the Proposal and Contract, or exact copies of them when submitting bids. These are: Bid Schedule; Bid (Construction Contract); Contract (Construction); Standard Government Form of Bid; Bid Bond (Construction or Supply); Performance Bond (Construction or Supply); and Payment Bond (Construction).

OFFICIAL PROPOSALS

Bids: July 24, 1956

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
RESERVOIR CLEARING
BETWEEN
POINT THREE POINTS AND RED MILLS POINT NEAR WADDINGTON, ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-5-11020
ST. LAWRENCE CONTRACT NO. 28

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Reservoir Clearing between Point Three Points and Red Mills Point near Waddington, St. Lawrence County, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M. Eastern Daylight Saving Time on the 24th day of July, 1956, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in until 10:15 A.M. Eastern Daylight Saving Time on the 24th day of July, 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

The work consists of approximately 140 acres of clearing.

The work shall be completed on or before December 1, 1956.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00)) dollars per initial set and Five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids will not be restricted to American contractors.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: August 14, 1956

Port of New Orleans

ADVERTISEMENT

Sealed bids will be received by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until Tuesday, August 14, 1956, at 2:00 o'clock P.M., and then publicly opened for furnishing approximately 1700 tons of steel sheet piles.

Deposit of three per cent of the sum bid, by certified check only, certified by an accredited officer of an accredited bank, is required with each bid.

A surety bond, in acceptable surety company, for fifty per cent of the amount of the contract, is required with notarial contract.

Specifications and bid forms are on file in the Board's office mentioned above. Complete sets will be furnished to prospective bidders on application.

The right is reserved to accept or reject any or all bids and to waive informalities, and to award a contract or contracts as the Board may determine to be for its best interests.

Bids: October 1, 1956

Water Supply & Systems

Corposana, Asuncion, Paraguay, is receiving bids on a complete water supply system. Contract 1, general construction contract; Contract 2, furnishing treatment plant equipment; Contract 3, furnishing pump equipment; Contract 4, furnishing materials for electrical transmission lines; Contract 5, furnishing pipe and miscellaneous items. Opening of bids October 1, 1956. Qualifications should be furnished before preparation of bids. For detailed information address Rader Engineering Co., 111 N.E. 2nd Avenue, Miami 32, Florida.

U. S. Government

GOVERNMENT OF IRAQ DEVELOPMENT BOARD & MINISTRY OF DEVELOPMENT BAGHDAD DIBIS POWER STATION CONTRACT NO. 4 CIVIL ENGINEERING WORKS.

The Development Board and the Ministry of Development of the Government of Iraq invite tenders from experienced Civil Engineering Firms for the construction of the Civil Works for the Dibis Power Station, Iraq.

Tender Documents may be inspected on and after July 2nd, 1956 until August 27th, 1956 at the following addresses:—

1) Directorate General of Legal Affairs and Contracts, Ministry of Development, Development Board, Baghdad.
2) Embassies of Iraq, in Washington, London, Paris.
3) Royal Legations of Iraq in Bonn, Brussels, and Rome.
4) Consul Honoraire of Iraq in Stockholm and Egyptian Legations in Bern and the Hague.
5) At the office of the Consulting Engineers, Messrs. Electrobel-Traction & Electricite, 1, Place du Trone, Brussels.

Firms desiring to tender may obtain two sets of Contract Documents, each set consists of Volume 1, 2, 2A, 3B, 3C, 3D, and 4 for tender, on and after July 2nd, 1956 until August 27th, 1956, from either the Directorate General of Legal Affairs and Contracts at the Development Board offices, Baghdad, or Messrs. Electrobel-Traction & Electricite, 1, Place du Trone, Brussels, Belgium, or the above mentioned Embassies and Legations on payment of thirty Iraqi Dinars or the equivalent of same. This charge will not be returned to the tenderers.

All tender documents are to be submitted in English, and they must be accompanied by a deposit of ID. 15,000 (Fifteen thousand Iraqi Dinars), which must be paid in cash to the Directorate General of Accounts of the Ministry of Development and the receipt issued for such payment must be attached to the Tender Documents. Such cash deposit may be replaced by a Bank Guarantee from or through an approved bank in Iraq.

Tenders must be submitted in sealed envelope marked on the outside "DIBIS Power Station—Tender for Civil Engineering Works". They must be delivered at the Ministry of Development on or before 12 noon local time on September 24th, 1956. If sent by post the tenders shall be registered, but tenderers must assure themselves of delivery to the Board in the due time. A letter of capacity, method of procedure, articles of association, are to be submitted with the tender at the same time.

Tenders not submitted within the time specified or not accompanied by a receipt of the deposit or Bank Guarantee shall be neglected.

The attention of tenderers is called to the fact that early completion of the project is desired, and therefore an early completion date will be considered an important factor in the selection of the successful tenderer.

The Development Board does not bind itself to accept the lowest or any tender.

Minister of Development.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4723) will be received at Denver, Colorado, until August 14, 1956, for furnishing the following motor-driven pumping units; vertical-shaft, turbine-type, four units, each with capacity of 11.7 cfs under 190 foot head; horizontal, centrifugal-type, four units, each with capacity of 11.7 cfs under 350 foot head, and three units, each with capacity of 13.0 cfs under 150 foothead, for Brewster Flat Pumping Plants, Foster Creek Division, Chief Joseph Dam Project, Washington. Delivery is desired within 300 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4729) will be received at Boise, Idaho, until August 21, 1956, for furnishing labor and materials for Extension of "C" Line Canal Pumping Plant, Payette Division, Boise Project, Idaho. Location near Emmett, Idaho. Principal items are 4,170 cu. yds. excavation; 380 cu. yds. concrete; 388 lin. ft. furnishing and laying 48-inch diameter HC50, HC75 and HC100 concrete pressure pipe; 1,525 sq. ft. constructing 8-inch concrete masonry unit walls; 21,000 pounds furnishing and erecting steel for pumping-plant superstructure; installing and testing one 75-cfs vertical centrifugal pump; and other work. Completion time 310 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities — executive, management, technical, selling, office, skilled, manual, etc.

RATES

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column — 3 columns — 30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Position Wanted ads are ½ of the above.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send new ads to Classified Adv. Div.,
Engineering News-Record,
P.O. Box 12, N. Y. 36, N. Y.

Design Engineers
Design Draftsmen

If you want

- HIGHEST EARNINGS
- OVERTIME WORK
- PERMANENT EMPLOYMENT
- OPPORTUNITY TO ADVANCE
- IDEAL WORKING CONDITIONS
- AIR-CONDITIONED OFFICES
- MANY OTHER BENEFITS

Please be sure to contact or see

Arthur G. McKee & Co.

with Engineering Offices in
CLEVELAND, OHIO and UNION, N. J.

McKee is a 50-year-old Engineering and Construction firm doing business on a world-wide basis.

Interesting, well-paying positions for

DESIGNERS, ENGINEERS, DESIGN DRAFTSMEN and DRAFTSMEN qualified in

PIPING	PRESSURE VESSELS
CONCRETE	EQUIPMENT SPECS.
STRUCTURAL	ARCHITECTURAL
ELECTRICAL	MECHANICAL

Refinery, Chemical, Blast Furnace, Steel and Sintering Plant, Industrial or Office Building design or drafting experience desirable but not necessary.

The expanding McKee organization, with three engineering divisions, Refinery, Metals and Industrial, offers many interesting opportunities in these highly-paid fields.

Investigate the opportunities McKee can offer you. If you want complete information write for our free booklet "Your Future in Engineering".

Please see or contact:
Edward A. Kolnar

Arthur G. McKee & Company

2300 Chester Avenue • Cleveland 1, Ohio
TOwer 1-2300

ARCHITECTURAL DRAFTSMEN

INLAND IS EXPANDING! Last year we doubled the size and Staff of our modern, air-conditioned Architectural Drafting and Engineering Department. You can share in this growth. Unusual, challenging, permanent opportunity with excellent chances for advancement. Work involves layout and development of floor, roof and wall panels, interior partitions and prefabricated buildings under guidance of a registered Architect. Previous drafting experience should include work in a manufacturing firm, Architects or engineering office.

The men who qualify will enjoy the advantages of our pension, hospitalization and life insurance programs. Numerous employee recreational activities add to the friendly attitude Inland people share.

For an interview with us, give details of your work experience, job interests, education, age, marital status and salaries received.

INLAND STEEL PRODUCTS COMPANY
4101 West Burnham Street
Milwaukee, Wisconsin

HIGHWAY ENGINEERS
DESIGNERS
DRAFTSMEN
Drainage Engineers

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- *Permanent employment for qualified men*
- *Ample opportunity for advancement based on merit*
- *Generous transportation & moving allowances*

Plus: Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available.

PLEASE WRITE FULLY TO OR INQUIRE AT

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST. ST. LOUIS 1, MO.

INDUSTRIAL ENGINEERS

College graduates with minimum 6 years' work experience in industrial engineering, cost analysis or related activities. To provide industrial engineering services ranging in scope from shop layout to organizational changes in major oil producing operations.

Write, giving full particulars regarding personal history and work experience. Please include your telephone number.

Recruiting Supervisor, Box 93

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, N. Y.

MECHANICAL ENGINEERS

(Ages 25 - 40)

Desired for career opportunities with major integrated oil company operating in South America. Position vacancies exist for graduate mechanical engineers at levels requiring three to fifteen years of mechanical engineering experience. Activities include design, installation and modification of boilers, pumps, turbines, compressors, tanks, hoists, conveyors, heat exchangers and associated piping, in shops, pump stations, tank farms, power plants, launches, barges & tugs. Also planning and design of mechanical engineering phases of cargo handling facilities, warehousing facilities, pipe coating and wrapping processes, aggregate and concrete plants, new pipeline construction, and mechanical features of construction project pertaining to refinery, oil production and shipping operations. Salary including bonus, $12,500-$19,000, depending on qualifications and experience. Liberal employee benefits and home vacations with travel expenses. Send complete resume of work experience and personal data. Interviews will be arranged for qualified candidates. All replies confidential.

Box 480
Dept. T-77
New York 19, N. Y.

DRAFTSMEN

Experienced in structural and pipe work for Engineering Department assignments. Permanent positions offer excellent future, complete benefit plans, and best of working conditions in new nylon project.

NATIONAL ANILINE DIVISION
Allied Chemical & Dye Corporation
P.O. Box 831, Hopewell, Virginia

Engineers
Architects

Highway—Bridge
Designers—Draftsmen
Soils Engineer
Irrigation Designer
Construction Engineer (Irrigation)
Architectural Designers—Draftsmen
Ink Tracers—Computors
Civil Engineering Draftsmen

Air Mail Resume TO R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., Inc.
BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

ENGINEER

Heavy construction or building background. Must know plans thoroughly. To act as Job Engineer on technical type of job. Job location Lakehurst, N. J. Write fully.

ROSCOE ENG. CORP. & ASSOCS.
1107-19th St. NW Washington 6, D. C.

BRIDGE ENGINEERS

Field Engineers, Designers and Draftsmen. Pleasant working conditions. Interesting projects. Qualified graduates may apply in person or write fully stating education and experience.

D. B. STEINMAN, *Consulting Engineer*
117 Liberty St. New York 6, N. Y.

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in middle Atlantic states. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-8324, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ESTIMATOR BUILDING PRODUCTS

INLAND IS EXPANDING! Last year we doubled the size and Staff of our modern, air-conditioned Architectural Drafting and Engineering Department. You can share in this growth. Unusual, challenging, permanent opportunity with excellent chances for advancement. Duties involve preparation of quantity surveys of floor, roof, wall and interior partition panels. Also to assist in development of details and preparation of drawings for special application of our building materials. Estimating experience essential.

The man who qualifies will enjoy the advantages of our pension, hospitalization and life insurance programs. Numerous employee recreational activities add to the friendly attitude Inland people share.

For an interview with us, give details of your work experience, job interests, education, age, marital status and salaries received.

INLAND STEEL PRODUCTS COMPANY
4101 West Burnham Street
Milwaukee, Wisconsin

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
New York: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Young graduate civil engineer with two years or more experience in building design or construction with liking and aptitude for structural design and analysis. Position with National Association in concrete products field, Chicago Headquarters. Excellent opportunity in growing organization and industry. Please furnish complete resume, including salary desired, in first letter. P-2158, Engineering News-Record.

Assistant Professor—To teach undergraduate courses in structures and applied mechanics. Salary depends on qualifications of applicant. Department of Civil Engineering, University of North Dakota, Grand Forks, N. Dak.

Engineer Estimator with foreman and superintendents experience on large and small sewer jobs. This is a small company; current gross $650,000. Personnel is competent and no junk equipment. Large but competitive market. Midwest location. Key job to man with proven ability. Salary, share of total profits, and voice in company affairs. State full experience and salary expected in first letter. P-2099, Engineering News-Record.

Bridge construction superintendent wanted for work in Florida. Submit experience record, qualifications, wages desired, references, etc. Must be experienced in all phases of reinforced concrete and steel bridge construction. P-2148, Engineering News-Record.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere 400 E. Genesee St., Syracuse, N. Y.

Engineering graduates with experience in the testing and control of placement of soils, concrete or asphalt mixtures for work immediately abroad and in New England for an old established engineering organization. Give full details of experience and education. Salary range $5,000. to $10,000. per year. P-2147, Engineering News-Record.

Accountant . . . able to fill responsible position in main office of medium size construction firm. Prefer man in early 40's with experience in construction accounting. Located in central Connecticut. Send full details and salary requirements. Reply P-2176, Engineering News-Record.

ENGINEERS SR. PROJECT

Ten years' experience in Project supervision on Chemical Process Plant or Atomic Energy Plant Engineering contracts. Must be graduate engineers capable of handling top level customer contact. These are key positions with an established firm and will pay high salaries to properly qualified men. Replies in confidence. Write giving qualifications to:

CATALYTIC Construction Co.
1528 Walnut Street
Philadelphia 2, Pa.

POSITIONS VACANT

Asphalt Batch Plant & Laydown Inspectors. Also, soils lab. tech.—O'seas Airbase, mild climate. Call or write Mr. Lambert, Patchen & Zimmerman, 120 Greenwich St. NYC RE2-4187.

Civil and structural engineers by consultant on buildings, bridges and highways. Excellent opportunity for several well qualified men. Box 121, Station H, Toledo, Ohio. Replies acknowledged.

R. R. Bridge Designers, permanent positions with consulting engineers in Chicago. State experience and salary desired. Do not apply if presently employed by C.&N.W., Wabash, Pennsy., I.C., B. & O., Erie, Nickel Pl., C.R.I. & P., Soo Line. All applications will be answered and kept strictly confidential. P-2207, Engineering News-Record.

Civil Engineer with executive ability. Will get experience in all phases of engineering. Age 30-40. Opportunity for capable and ambitious man. Salary open. Write: P-2060, Engineering News-Record.

Construction Engineer wanted with college degree in engineering or equivalent practical experience by expanding contractor engaged in general building work. Job consists of estimating, some purchasing, and looking after jobs from the office. Fine opportunity. Location Southwestern Michigan. Give age, education, experience, salary desired and snapshot if available. P-2266, Engineering News-Record.

Purchasing Assistant wanted by contractor engaged in general building work. Excellent opportunity. Location Southwestern Michigan. P-2270, Engineering News-Record.

Construction Mgr. for expanding metrop. G. C. Supt. & labor following, CE degree. State details, salary. P-2262, Engineering News-Record.

Registered Engineer with minimum 5 years experience in tunnel construction to act in capacity of safety engineer for Ohio sewer project. Familiarity with compressed air construction and all safety methods essential. Please state full qualifications, experience, references and salary requirements in first letter. P-2221, Engineering News-Record.

Highway and Bridge Designers and Draftsmen needed for work in Rhode Island area. Send experience record to P. O. Box 752, Providence, Rhode Island.

Superintendent or General Foreman: To plan and supervise erection of posts and columns for Turnpike Signs—permanent position with good opportunity for the right man—salary open. Walter Sign Co., Box 32, Woodside 77, N. Y.

POSITIONS VACANT

Engineer—Draftsman: To prepare shop drawings and schedule field operations, some field supervision—good opportunity for the right man—salary open. Walter Sign Co., Box 32, Woodside 77, N. Y.

Asphalt Superintendent—permanent job for real superintendent. Must have lay down and plant experience. Record of accomplishment as superintendent equally as important as amount of experience. Initial assignment Florida Turnpike. Wage normal to Florida Highway work. P-2227, Engineering News-Record.

Town Engineer—Starting salary $8500.00 per annum. To plan, direct and co-ordinate engineering activities for the Town of Westport, Connecticut. Must meet requirements for registration as Professional Engineer in Connecticut. Application forms may be obtained from Office of Selectmen, Westport, Connecticut, Office of State Personnel Director, Hartford, Connecticut or from any office of the Connecticut State Employment Service. Applications must be returned or mailed to the Board of Selectmen, Westport, Connecticut before midnight July 19, 1956.

EMPLOYMENT SERVICES

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L. P. O. Box 674, Manchester, Vermont.

POSITIONS WANTED

General Superintendent—Expert Methods Man, presently with large Western Engineer Contractor, as Member of the Board and General Superintendent of Operations. Wants change for personal reasons. 41 years old. From Denver, Colorado, West. Will consider smaller company, if they are ambitious. PW-2154, Engineering News-Record.

Construction Superintendent, experienced with refineries, chemical plants, all types of heavy construction, good estimator and cost engineer, either engineering or detailed estimates, available soon. Age 47, speaks, reads and writes Spanish, Latin American experience, location unimportant, have good following. Prefer chemical plant or mill and smelter, comprehensive all crafts. PW-2142, Engineering News-Record.

Construction Engineer, 31 BSME 4 yrs. experience. Field Engr. and assist. supt. on industrial and institutional bldgs. Relocate to West Coast or overseas with wife (teacher & secretary.). PW-2108, Engineering News-Record.

Position Wanted, Construction superintendent age 48 twenty five years experience on bridges, roads and heavy work, clean record, graduate engineer, available thirty days, now completing large bridge project, address PW-2167, Engineering News-Record.

Structural Engr. 36, BSCE, P.E., Married, 6 years structural design, 3 years watersewer design and construction. Available for responsible position in any location. PW-2210, Engineering News-Record.

Construction executive, 33, B.S., general manager, estimator, thoroughly experienced industrial, commercial construction. Location immaterial. PW-2181, Engineering News-Record.

Const. Eng. & Supt. Grad. C.E. 48 yrs. old. Experienced on industrial commercial & school work. Loc. East. PW-2260, Engineering News-Record.

I.C.S. C.E. Grad. 9 yrs exp. Hwy-eng. construction, design & surveys prefer Calif. location. PW-2234, Engineering News-Record.

Graduate Engineer-31-Resident engineer sewerage; Ass't resident engineer highways and bridges; town engineering experience. PW-2238, Engineering News-Record.

Construction Executive, Sound field and office experience on Buildings and heavy construction, qualified to handle all phases of contracting, seeks new connection as project manager, chief estimator or similar position requiring top man. Now employed. Minimum $15,000. PW-2240, Engineering News-Record.

Construction Supt. or Assit. available immediately. PW-2265, Engineering News-Record.

Construction Manager presently employed by engineering construction company wants to associate with small architect or contractor who desires to expand construction activities. Graduate C.E. 10 years experience. 33 years old. PW-2264, Engineering News-Record.

ENGINEER
(CIVIL—OVERSEAS)
HIGHWAY MATERIALS and TESTING ENGINEER

Position: In charge of modern highway testing laboratory and materials survey in Near East.

Requirements: 15-20 years experience. Ability to organize and direct a country wide materials survey and train personnel in testing operations.

Top salary—good living conditions—liberal benefits including paid transportation for wife.

P-1812, Engineering News-Record
330 West 42 St., New York 36, N. Y.

SALES ENGINEER
CONSTRUCTION EQUIPMENT

Opportunity for sales engineering work for energetic young engineer or construction man, 25 to 35 years of age for sales work in established territory with company operating on nation-wide basis furnishing metal forms for sale or rent to handle concrete forming work. General construction experience or some civil engineering training desirable. Give full details of background and experience in first letter to:

R. P. Wilkinson,
Economy Forms Corporation
P. O. Box 128, H. P. Station
Des Moines, Iowa

INSTRUMENT ENGINEER

Prefer degree in Chemical or Mechanical Engineering with 2-5 years experience in instrument application to batch and continuous processes. Recent graduate in Instrument Engineering acceptable. Familiarity with pneumatic controls in fluid flow, pressure and temperature measurement recording desirable along with some knowledge of electronic control systems.

Excellent engineering opportunity with new synthetic fiber project. Complete benefit plans, and the best of working conditions.

NATIONAL ANILINE DIVISION
Allied Chemical & Dye Corporation
P. O. Box 831 Hopewell, Virginia

CIVIL ENGINEERS

Grade III up to $8061; Grade II up to $6849. Municipal work in the design of streets, sewers, and sanitary installations. Opportunity to gain valuable experience. Some field check in following designs through to completion. Immediate vacancies for seven men. Exceptional fringe and pension benefits. Write to Department of Personnel, City Hall, Dearborn, Michigan, submitting qualifications and expected salary.

ESTIMATOR

General Building Construction (No Housing) Permanent position in home office of 40 yr. old San Francisco Firm. Reply giving complete qualifications, pictures, and salary desired.

P-2223, Engineering News-Record
68 Post St., San Francisco 4, Calif.

WANTED REPRESENTATIVES

Manufacturer located in central New Jersey desires representation in New England, South Atlantic, and South Central for line of Joint Sealers, Concrete Curing and Caulking Compounds. Must have contact with Contractor Equipment Dealers, Contractors and Engineering Constructors. Write qualifications and present representation if handling under five or six lines only.

RW-2292, Engineering News-Record
Classified Adv. Div., P.O. Box 12, New York 36, N.Y.

When Answering
BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

ENGINEERS
DESIGNERS
DRAFTSMEN

Permanent openings in our St. Louis and San Francisco offices for qualified personnel experienced in design of structural steel and reinforced concrete for work on

BRIDGES & BUILDINGS
HYDROELECTRIC PROJECTS
INDUSTRIAL FACILITIES

Openings also available for mechanical and electrical designers and draftsmen for work on power plants, test facilities, large electrical installations and general industrial projects. Several recent graduate engineers will be added in all categories.

We desire men who want long range employment with ample opportunity for professional development and advancement. Excellent Employee Benefits & Retirement Plan, generous annual leave and sick leave, Blue Cross, paid holidays.

Please write fully to

SVERDRUP & PARCEL, INC.
Engineers — Architects
915 Olive Street St. Louis 1, Mo.

HIGHWAY ENGINEERS
for work in
New Jersey and New York

Designers, draftsmen, chiefs of party, specification writers — submit complete resume stating education, experience, salary desired and date of availability to

P-1803 Engineering News-Record
330 W. 42 St. New York 36, N. Y.

POSITION VACANT

Superintendent of Sewers and Sewage Disposal
East Providence, Rhode Island

Charge of recently constructed 4 MGD standard rate trickling filter sewage treatment plant, sewer system and pumping station. Preferably graduate engineer with several years' operational experience.

Send full resume of training, experience, availability and acceptable starting salary to Board of Sewer Commissioners, Town Hall, East Providence, Rhode Island.

CIVIL ENGINEERS

HIGHWAY DESIGNERS
STRUCTURAL DESIGNERS
DRAFTSMEN
SURVEYORS
INSPECTORS

Placement service for established organizations located in central and eastern United States. Salaries open. Fee paid by employers. Submit complete resume of experience to

P-2278, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

All applications held in strictest confidence.

BECHTEL

ENGINEERS
DESIGNERS
DRAFTSMEN

Immediate openings in our

SAN FRANCISCO
and
LOS ANGELES
OFFICES

In The

MECHANICAL
ELECTRICAL
CHEMICAL
STRUCTURAL
PIPING
CIVIL

Fields of
Hydro-Electric
Steam Power
Sub-Station
Petroleum Refineries
Petro-Chemical
Chemical

Design

Engineers, Designers, and Draftsmen having qualifying experience in one or more of the above fields, please submit complete resume listing education, experience, salary history, present salary requirement, and availability date to:

5 West 45th St. New York 36, N. Y.
220 Bush St., San Francisco 4, Calif.

Confidential interview can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, Calif.

BECHTEL
Engineers - Constructors

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, power-plants, river control works and highways. Permanent positions. Liberal employe benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING COMPANY
400 W. Madison St.
Chicago 6, Ill.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

BUSINESS OPPORTUNITIES — EQUIPMENT - USED or RESALE

UNDISPLAYED RATE:

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS $2.10 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE:

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW Ads or Inquiries to Classified Adv. Div. of Engineering News Record, P. O. Box 12, N. Y. 36, N. Y.

FOR SALE

Save On Good Used

WOOD ROADMIXERS

1—Model 42

2—Model 54

1—Cement Bulker for Cement Stabilization

1—Cement Transfer Screw

CLYDE W. WOOD & SONS, INC.

P. O. Box 620

North Hollywood, Calif.

FOR SALE or RENT

1—25 Ton Bay City Truck Crane, 95' Boom, New 1952.

B. M. WEISS CO.

Girard Trust Bldg. Philadelphia 2, Pa.

FOR SALE

1 Motorola—60 watt, two-way Radio, 1 Base station and 2 Mobile stations, interchangeable between 6 and 12 volts.

1 Forney compression Tester No. 546—Model Q C 125.

2 Insley #2610—1 cubic yard concrete buckets.

2 Day Smith Lugger Cranes—mounted on half truck chassis.

1 International Tractor and 1 #436 Davis—2000 gallon water tank and trailer with pump. Excellent for water curing concrete where there is no water supply.

Steel Igloo Forms, two complete sets and two inside sets. Size 81/0 long x 26/6 wide and 13/3 to center of arch.

EARL L. CUMP, INC.
251 Park Avenue
Chambersburg, Penna.

FOR SALE

3 Clyde Hoists, 40 H.P., completely equipped.

1 Wellman-Seaver-Morgan Hoist, 300 H.P. completely equipped.

3 Whitcomb 10 ton locomotives, 36" guage, with Battery Boxes.

7 Five cubic yard Watt Side Dump Cars, 36" gauge.

3 Eimco Muckers, 40 H.P.

4 Conway Muckers, 75 H.P.

Frazier-Davis Construction Co.
1319 Macklind Avenue
St. Louis 10, Missouri
STerling 1-1950

USED POWER SHOVELS

1 Lorain L79, 55 ft. crane boom, Waukesha WK engine, 1½ shovel attachment with 1¼ dipper.
1 Link Belt K300, 1½ yard shovel, Cat. D13000 engine.
1 Byers Model 83 ¾ yd. shovel, 40 ft. boom and backhoe, Hercules gas engine.
1 Lorain TL20 MC Moto Crane, 40 ft. boom.
1 Lorain L78 1½ yd. Shovel powered by Cat. D13000 engine.
1 Lorain L40A Backhoe, Waukesha 6MZR gas engine.
1 Lorain L820 Waukesha WAKD power, 2 yd. shovel.
1 Link-Belt LS85 ¾ yd. Crawler Shovel powered by Cat. Diesel.

POWERED EQUIPMENT CORP.

Authorized Lorain Distributors
130 Needham St., Newton Highlands
LA 7-5450
Providence, REgent 7-7702, 2996

DRAGLINE

Model 7200 MARION Walking Dragline 110 Ft. Boom, (2) 6½ Yd. Buckets, Cooper-Bessemer Engine Rebuilt May, 1956. Cummins Swing Motor. New. Machine new 1950. Price, including spare parts $100,000.00

ANDERSON EQUIPMENT CO.

Box 1737, Pittsburgh 30, Pa.

Phone: LEhigh 1-6020

FOR SALE

1—Koehring Twinbatch Paver, Model 34E, G.M. Diesel, like new.
1—Grade More Slope Grader attachment for #12 Grader, like new.

Write—Wire—Call

A. & J. BUYERS, INC.
3580 Sheridan Drive Buffalo 21, New York

HIGH PRESSURE JET HOSE

3" 400 lb. PSI Working in 1600 lb. Test Triple Clamped, Nipples, and HD Flanges Assorted Lengths 6', 10' 25' 30'

Sale or Rent

GRIFFIN WELLPOINT CORP
881 East 141st Street New York 54, N. Y.
MElrose 5-7704

WANTED

Tractor Shovel, late model and ⅜ yd. Truck Mounted Back Hoe

W-2220, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N.Y. 36, N.Y.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

GEO. E. DEATHERAGE & SON CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

FOR SALE

1947—¾ Yd. Limn 3 Attachments 315 Cat. Eng.
1952—TD 14 International Dozer
1948—Huber Maintainer
1947—½ Yd. Unit 3 Attachments
1954—Minneapolis Moline ½ Yd. Loader
1947—Ward LaFrance Tractor
1948—Davey Compressor

PRICED FOR QUICK SALE

STEVISON CONSTRUCTION CO., INC.
150 Pomeroy Ave., Meriden, Conn.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.

Send for free booklet without obligation

WILSON Engineering Corp.

College Home Offices HARVARD SQ. CAMBRIDGE, MASS.

FOR LEASE

Office space for sublease 650 x 1,000 sq. ft. Zirkle, Breden & Co., 30 Vesey Street, New York 7, N. Y.

An Investment !

Productive advertising is an INVESTMENT rather than an EXPENDITURE.

"Searchlight" advertisers almost invariably report prompt and satisfactory results.

BE CONVINCED — send us your advertisement TODAY.

Address
Classified Advertising Division

ENGINEERING NEWS-RECORD

330 WEST 42nd STREET

NEW YORK 36, NEW YORK

EQUIPMENT FOR SALE

3—15-18 yd. Wooldridge Scrapers, 1953 model OS-152

2—14-18 yd. Wooldridge Scrapers, 1943 Model T.C.R.

5—Nordberg Hydraulic Track Jacks, Model B.J.

Morrison-Knudsen Company, Inc.
Box 320—Anchorage, Alaska

1—15-19 yd. Wooldridge Scraper, Model TC-142

1—17-20 yd. Wooldridge Scraper, Model TC-170

Morrison-Knudsen Company, Inc.
Box 1067—Fairbanks, Alaska

FOR SALE or RENT

1—Full Revolving Electre Gantry Crane, 440-60-3

1—Full Revolving Steam Gantry Crane, 40 tons capacity

1—Full Revolving Steam Crane 80 tons capacity, for barge or gantry mounting

1—955-A P&H Diesel Crane, with Fairlead, only 400 hrs.

2—250' Car Floats or Barges

1—lot of Blaw-Knox Steel Forms like new, suitable for dams or walls

1—Steel Stiff Leg Derrick, 25 tons capacity, 80' boom. Complete with electric hoist.

4—100 ton—5-sheave Derrick or Crane Blocks with Shackle, and with Cheek Weights, reasonable.

4—50 ton—4-sheave Blocks with Shackle, with or without weights.

2—Steel Barges 210' x 55' x 10'.

20—Pontoon Float Bridges 5' x 5' x 7'

WILLIAM P. SWIFT
P. O. Box 174 Springfield, Pennsylvania
Swarthmore 6-8999

USED TRUCK MIXERS

2 Rex 5½ Adjusta-Hite Mate Mixers
1 Gorham Rupp 4-in. water cooled Pump, Model 14A powered by Hercules IXB engine.

POWERED EQUIPMENT CORP.
Authorized Rex Distributors
130 Needham St., Newton Highlands, Mass.
LA 7-5450
Providence, REgent 7-7702, 2996

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS BRIDGES BREAKWATERS FILTRATION AND SEWERAGE PLANTS

FOR SPEED ECONOMY EFFICIENCY FLOOD SAFETY LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FOR SALE

Lima Model 802 Crane-Dragline

Model D-17000 Caterpillar Engine, Oversize cats, full accessories.

George A. Bass Construction Co.
Birmingham, Michigan

FOR SALE or RENT—EASY TERMS
Rebuilt—A 1 Condition
48B Bucyrus Erie Shovel 2 cy Diesel
Northwest Model Shovel, 1½ cy
Comb. Caterpillar D8 & 80 Scraper
10 ton Buffalo Springfield Gas Roller
International Vibro-Tamper

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6600

SHOVELS - DRAGLINES
DRILLS
TRACTORS - TRUCKS

190-B Bucyrus Erie Elec. 8 yd. Shovel
170-B Bucyrus Erie Elec 6½ yd. Shovel
120-B Bucyrus Erie Elec. 5 yd. Shovel
1600 P & H 6 yd. Electric Shovel
2400 Lima 6 yd. Diesel Shovel
2400 Lima High Lift 4 yd. Shovel
111-M Marion 3½ yd. Diesel Shovel
955 P & H 2½ yd. Diesel Shovel
54-B Bucyrus Erie 2½ yd. Diesel Shovel
80-D Northwest 2½ yd. Diesel Shovel
22-B Bucyrus Erie ¾ yd. Shovel
7400 Marion Elec. Drag 200' boom, 8 yd.
9-W Bucyrus Monighan Drag 170', 13 yd.
625 Page Diesel Drag 150' boom, 10 yd.
625 Page Diesel Drag 160' boom, 9 yd.
200-W Bucyrus Monighan Drag 140', 6 yd.
2400 Lima Diesel Dragline, 130', 5 yd.
4500 Manitowoc Diesel Drag 120' 5 yd.
1055 P & H Diesel Dragline, 80', 4 yd.
3500 Manitowoc Diesel Drag 85', 2½ yd.
595 Link Belt, 75', 2½ yd., independent boom hoist
600 Reich Heavy Truck Mounted Rotary Drill
Quarrymaster Drill with 2-500 cu. ft. compressors
58-BH Joy Champion Rotary Air Drills Also 42-T, 29-T & 27-T Well Drills
EUCLID TRUCKS—Many to Choose From

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

DIESEL GENERATORS

3—Fairbanks Morse Engines and Alternators KVA 510, KVA 300, and KVA 170

1—Winton Model 8/1580 direct connected to an E.M. Alternator 606 KVA

All of the above 480 volts 3 phase 60 cycle. In excellent operating condition. Can be seen running.

Facilities available for re-installing if desired.

A-1 Iron and Metal Company
10010, South Alameda Street
South Gate, California
P.O. Box 511 Phone LOrain 6-6196
Contact: Fredrick Riley

SEE THESE
SPECIAL OFFERINGS
YOUR
CATERPILLAR DEALER
for Lower N. Y. State and Conn.

CATERPILLAR D8 Diesel Tractor, 24" tracks, c.c. guard, canopy top w/hydr. dozer and D.D. Cable Control. Subject to inspection. **$4,500.00**

CATERPILLAR D8 Diesel Tractor, 22" tracks, c.c. guard, canopy top, elec. starter, pull hook w/Cat. hydr. Bulldozer. Recent series. **Excellent condition. New tracks $15,500.00**

EIMCO LOADER Model 104, mounted on Cat. D4 Tractor, 13" flat tracks, steel canopy top, electric starter, 4 elec. lights, EIMCO overhead loader bucket, capacity 1 cu. yd. Rebuilt and guaranteed. Ideal tool for tunnel and mining work. cost new approx. $15,000.00. **This machine used less than 1,000 hours. $10,500.00**

CATERPILLAR D7 Diesel Tractor, large front idlers, 22" tracks, c.c. guard w/CAT 7S DOZER and #25 D.D. Cable Control. Good operating condition. **Reconditioned. Guaranteed. $7,500.00**

INTERNATIONAL TD14 Diesel Tractor, c.c. guard, front pull hook, elec. starter w/hydr. Bulldozer blade. Satisfy yourself—see it—operate it. **$3,500.00**

ALLIS CHALMERS HD15 Diesel Tractor, 22" tracks w/hydr. Dozer, pull hook, canopy top. **Reconditioned—30 day guarantee. $9,250.00**

CATERPILLAR D2 Diesel Tractor, 40" gauge, 12" tracks, large front idlers, c.c. guard, w/Cat. 2S Hydr. Dozer. **Good operating condition. $4,250.00**

Subject to Prior Disposition

H.O.Penn Machinery Co. Inc.
140TH ST. & EAST RIVER,
NEW YORK 56, N. Y.
CYPRESS 2-4800

H. O. PENN MACHINERY CO.
140TH ST. & EAST RIVER,
NEW YORK 56, N. Y.

☐ I am interested in.....
☐ Send me all used Listings.....
NAME .....
ADDRESS .....ENR

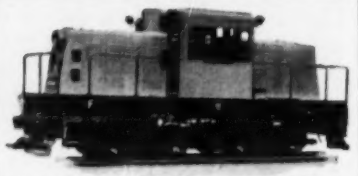
FOR SALE
WIDE FLANGE BEAMS

8" WF @ 31#	10" WF @ 39#	12" WF @ 45#	14" WF @ 48#
8" WF @ 35#	10" WF @ 45#	12" WF @ 50#	14" WF @ 53#
10" WF @ 21#	12" WF @ 27#	14" WF @ 30#	18" WF @ 105#
10" WF @ 25#	12" WF @ 31#	14" WF @ 34#	24" WF @ 76#
10" WF @ 29#	12" WF @ 36#	14" WF @ 38#	24" WF @ 84#
10" WF @ 33#	12" WF @ 40#	14" WF @ 43#	33" WF @ 152#

We are also interested in purchasing your surplus material.

ALAN STEEL COMPANY, INC.

1241 Searles Road, Toledo 7, Ohio — Phone: FRanklin 1611



50 T. PORTER DIESEL ELECTRIC LOCOMOTIVE, new '41, ser. #7300 cl; 150 HP Cummins Engines (total 300 HP) used 1 yr; excellent condition $19,750
DIESEL ELECTRIC LOCOMOTIVES, & locomotive cranes, 25-45-50-65-80-105 tons.
Tel. EDison 4-9471-2
EVEREADY: PO Box 638; BRIDGEPORT, CONN.

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8" B P	36#	19/35'
10" B P	42#	45/50'
12" B P	53#	60/65'
14" B P	73#	60/65'
14" B P	89#	60/65'

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
14-23 34th Ave., Astoria, N. Y.
Phones: AStoria 8-4484 8-8023

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

RAILS
FOR IMMEDIATE DELIVERY

NEW AND RELAYING QUALITY

TIE PLATES
FROGS SWITCHES
LIGHT RAILS
TRACK ACCESSORIES

MORRISON
RAILWAY SUPPLY CORP.
814 Rand Bldg. Buffalo 3, N. Y.
MOhawk 3820

DRAGLINE

LIMA Model 1201 with 80-ft. Boom. G-M Diesel Engine with one rebuilt spare Cummins Engine. (1) 3 Yd. PAGE and (1) 3½ Yd. HENDRIX Bucket. Machine new in 1951. Priced Right.

ANDERSON EQUIPMENT CO.
Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

EUCLIDS
Used 13 yd. bottom dumps
Cummins & General Motors Powered
Located - Texas - Pa. - N. Y. State
Write, Wire or Phone
L. B. SMITH, INC.
Camp Hill, Penna.
Tel: **Harrisburg, Regent 7-3431**

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave., New York, N. Y.
Reno, Nevada
Park Bldg., Pittsburgh, Pa.
Carnegie, Pa.

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons, Booms to 160 ft.
TRUCK CRANES — Capacities to 25 tons, Booms to 150 ft.

P and H, Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

RAILROAD Cross and Switch TIES
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
29 East Madison St. Chicago 2

FOR SALE—USED LE TOURNEAU EQUIPMENT

2—Super C Tournapulls with 15 cu. yd. Scrapers
2—Tournadozers
3—B.33 Tournapulls with 35 cu. yd. Scrapers

Equipment in good working condition.
Over $100,000.00 inventory of spare parts. List can be furnished on request. Offers invited

J. N. HARRIMAN & CO. LTD.
P. O. Box 232, Port-of-Spain, Trinidad, B.W.I.

RAILS
NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 DAYDEN STREET
CHARLESTON, W. VA.
IMMEDIATE DELIVERY

LOCOMOTIVES

We own and offer
Subject to prior sale
2—80 ton WHITCOMB diesel electric, 650 HP, new 1944
2—45 ton PORTER diesel electric, 300 HP, new 1942

Full data and prices on request.
May be inspected in operation.

PAN AMERICAN ENGINEERING COMPANY
P. O. Box 1709 Tel. LOgan 8656
Dallas, Texas

RAILS - TIE PLATES
Frogs & Switches—Track Accessories
W. H. DYER CO., INC.
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

8½ YD. SMITH TRUCK MIXER

Used as Demonstrator for short time.
Excellent Condition.
Hodge & Hammond, Inc.
720 Garrison Avenue, Bronx, N. Y. C.
New York Phone—Kilpatrick 2-2400
New Jersey Phone—Market 3,5424

RAILS—New & Relaying from Largest Warehouse Stocks in U.S.

LB FOSTER CO.
PGH. 30 • N.Y. 7 • CHI. 4 • ATL. 8 • HOUST. 2 • L.A. 5

32 MARION—Rated 1½ Yards
Built to ship by mail
56'6" Boom $15,000.00
No. 1 VULCAN HAMMER 2,500.00
85' STEEL PILE LEADS 1,000.00
Located —Tampa, Florida

WESTERN FOUNDATION CORPORATION
2 Park Avenue — New York 16, N. Y.
Murray Hill 9-6441

YOUR OPPORTUNITY!

UNUSED Army Trucks
2½, 3½, 5-ton

GMC-DIAMOND T & INTERNATIONAL 6x6's

- *From Government Storage!*
- *Unused and Guaranteed!*
- *Factory-New Condition!*
- *Delivered on Approval!*
- *Reconditioned Trucks Also Available!*

Tandem axle trucks with front wheel drive, 10 forward speeds, overdrive, brand-new mud and snow tires. Carry maximum loads, give extra power you need in "rough going" . . . at LESS, often half the COST of conventional new trucks.

For Specifications, Prices, Delivery:
Phone Collect
MILTON Y. TOOMBS, JR.
Sales Manager

MEMPHIS EQUIPMENT Company.
CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
766 SO. THIRD ST. MEMPHIS, TENNESSEE

FOR SALE

DIESEL ELECTRIC LOCOMOTIVES

STANDARD GAUGE

25 - 35 - 40 - 50 - 65 - 75 - 100 tons

Write for Details

FRANK M. JUDGE & CO., INC.
7010 Empire State Building
New York 1, N. Y.

NEW AND REBUILT
STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 36" Track Gauge

GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

FOR SALE or RENT

25 ton Ohio Diesel Loco. Crane. 1947.
30 ton Browning Diesel Loco. Crane. 1947
40 ton Ind. BH. Steam Loco. Crane. 1942.
25 ton American Stiffleg. 100' Bm.
30 ton American #2 Guy Derrick. 90' Bm.
140 HP 2D Diesel Hoists 15000# SLP.
110 HP Amer. 3D #100 Hoist w/ Swinger.
45 ton Davenport Diesel Elec. Loco. 1942.
65 ton Whitcomb Diesel Elec. Loco. 1945.
1½ yd. Northwest #6 Diesel Crane New 1948.
1½ yd. Bucyrus Erie 38B Diesel Crane. 1948.
60 ton Manitowoc 3900 Erection Crane. Rent.
100 HP Lucey Portable Boilers. 200# WP.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

AGSCO ENGINEERED DIESEL POWER
STATIONARY—PORTABLE—MOBILE & MARINE
New and Remanufactured
100 to 2000 H.P. . . . 60 to 1500 K.W.
New Parts For All Engines
Write for Brochure

A. G. SCHOONMAKER CO., INC. Main Office—Sausalito, Calif., Sausalito 1600 Branch—50 Church St., N. Y. 7, N. Y., Digby 9-4350

PILING

SURPLUS NEW and USED For Sale or Rent

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

PIPE

Surplus New & Used
FOR SALE

PILING PILE FITTINGS • PIPE
CULVERTS • VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13 Sts., B'klyn, N. Y.

ALBERT PIPE SUPPLY APS

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW—USED

GREENPOINT IRON & PIPE CO. INC
Bogart and Vinal Streets Brooklyn N.Y.

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
100	M-115	60'	Chicago
210	M-116	29 to 30'	Colorado
190	M-115	16 to 20'	Kansas City
125	M-112	12 to 18'	Kansas
100	M-116	19 to 24'	Arkansas
100	M-116	19 to 22'	Iowa

CONMACO PHONE DRexel 1-3930

CONTRACTORS MACHINERY COMPANY
804 KANSAS AVE., KANSAS CITY, KANSAS

WANTED TO BUY
STEEL SHEET PILING
DIESEL LOCOMOTIVES
ROTARY DRIERS AND KILNS
ELEC. DRIVEN AIR COMPRESSORS

R. C. STANHOPE, INC.
60 E. 42nd St., N. Y. 17, N. Y.

LARSSEN SHEET PILING
WESTERN SERVICES CORPORATION
representative of SIDELOR FRANCE
601 E. Linden Ave., Linden, N. J.
HUnter 6-4606
STOCK AVAILABLE IN LINDEN, N. J.

When you need PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

We do a Nation-Wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

156 pcs. 60 ft. Corn. MP-112—Illinois
310 pcs. 60 & 50 ft. Both. ZP-32—New York
220 pcs. 60-30 ft. Corn. MP-116—Illinois
115 pcs. 50-40 ft. Inland I-23—Kansas
210 pcs. 30 ft. corn. MP-116—Colorado
44 pcs. 25 ft. Corn. MP-115—Kansas
58 pcs. 20 ft. Corn. MP-116—Tennessee
Other Lengths & Sections at Various Locations

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., Chestnut 1-4474, St. Louis, Mo.

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates

H-BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER Co.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications

Boston New York

Metcalf & Eddy
ENGINEERS

Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
1299 Statler Building, Boston 16

MIDDLE ATLANTIC

Greer Engineering Associates
SOIL MECHANICS

Foundation Designs and Analyses
Airphoto Soils and Geological Mapping
Undisturbed Sample Borings
Field and Laboratory Soil Tests
Geological Studies for Engineering Projects.
Earth Dam Design and Control
98 Greenwood Ave. Montclair, N. J.

Edwards, Kelcey & Beck
Consulting Engineers

Reports, Design Supervision
Subways, Expressways, Traffic, Parking
Harbor Works, Bridges, Tunnels
Housing and Industrial Developments

Newark, New Jersey
New York Philadelphia Boston

John Clarkeson
Consulting Engineer

Civil Engineers — Consulting Services

Highways, Airports, Bridges
Surveys, Waterfront Facilities

Albany and Watertown, N. Y.

Lockwood, Kessler & Bartlett, Inc.
Engineers *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping
One Aerial Way Syosset, N. Y.

E. Lionel Pavlo
Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

7 E. 47th St. New York 17, N. Y.

D. B. Steinman
Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction
Strengthening, Investigations,
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger
Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Avenue
New York 17, N. Y.

Robert W. Lowry
Consulting Engineer

Robert W. Lowry M. Lopkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis, 227 Pine, Harrisburg, Pa. 122 E. 42nd St., N. Y. P.O. Box 1141. 19 N. 8th St., Richmond, Va.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services

Foundation, Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

221 W. Olive Street, Scranton, Pa.
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St. New York, New York
306 Magee Bldg. Pittsburgh, Pa.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Engineers

Highways — Bridges — Toll Roads
Sewerage — Industrial Waste and Disposal — Water Works — Surveys — Reports — Design — Supervision — Consultation — Industrial — Municipal — Structures

611 W. Market St., York, Pennsylvania

SOUTH

Duval Engineering & Contracting Co.
General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville Florida

Rader and Associates
Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations.

111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
351 East Ohio St., Chicago 11, Illinois

THE CONSULTING ENGINEER

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

Toledo Testing Laboratory
Engineers—Chemists

Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory

1810 North 13th St. Toledo 2, Ohio

GEOLOGISTS

Geologic Associates
ENGINEERING GEOLOGISTS

Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling

1506 8th Ave. So — Nashville, Tenn.
9-1519 Phones 5-4402

INSPECTION & TEST

A. W. Williams Inspection Co.

Established 1921—Member A.C.I.I.
Inspection — Testing — Analyses — Supervision. Foundation Investigations, Soil Borings, Soil Mechanics, Concrete and Asphalt Design and Control, Radiography, Sampling, Calibrations, Timber and timber treatment inspections, Complete testing laboratory service.
Main Office: 208 Virginia St., Mobile, Ala.

The Haller Testing Laboratories, Inc.

Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges

Complete Soils Laboratory

Borings—Drilling—Load Tests

140 Cedar St., N. Y. 6, N. Y.
Boston, Mass.
Plainfield, N. J. New Haven, Conn.

Consult these Specialties

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

SEARCHLIGHT SECTION

(Continued from preceding page)

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1916
210 S. Canal St. Chicago (6), Ill.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NRL 67.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

RE-BUILT REPAIRS RENT REAL EXPERTS

ALL MAKES

BUFF

69 Day St., New York WOrth 2-2757

SPECIALIZED REBUILDING
of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.
Distributors for Brunson Instruments
Hickerson Instrument Co.
8 North Edmondson Avenue, Indianapolis 19, Indiana

ADVERTISERS IN THIS ISSUE

Amer. Bitumuls & Asphalt Co..... 81
Amer. Bridge Div, U S Steel Corp..... 75
Amer. Cable Div.,
Amer. Chain & Cable Co..... 100
Amer. Manganese Steel Div.,
Amer. Brake Shoe Co..... 85
The Asphalt Institute.....42, 43

Bakelite Co, Div UCC Corp..... 11
Belmont Iron Works..... 94
Bethlehem Steel Co..... 47
Bruning Co, Inc. Charles..... 57
Buda Div., Allis Chalmers Mfg. Co..... 108
Buffalo Springfield Roller Co..... 82
Byers Co. A M.....2nd Cover

Caterpillar Tractor Co.....35, 36, 37
Champion Mfg. Co..... 8
Clipper Mfg. Co..... 29
Clyde Iron Works Inc..... 87
Concrete Grinding Corp..... 84
Concrete Reinforcing Steel Institute..89, 98

Detroit Diesel Engine Div, GMC.....102, 103
Dravo Corp 71
Dresser Mfg. Div. Dresser Ind..... 63
Dudgeon Inc., Richard..... 88
DuPont de Nemours & Co..... 41

Eastman Kodak Co..... 79
Enjay Co. Inc..... 107

Fennel Instrument Corp. of Amer..... 51
Fenestra Inc. 55

General Electric Co.....64, 65
General Motors Truck Div..... 60
General Road Machines Inc..... 90
Goodyear Tire & Rubber Co..... 18
Graphic Systems 127
Greenlee Tool Co..... 34
Griffin Wellpoint Corp..... 94
Gunite Concrete & Construction Co..... 94
Gurley W & L. E..... 95

Hercules Motors Corp..... 54
Hercules Powder Co..... 66
Hose McCann Telephone Co..... 112
Hughes Bros., Inc..... 98

Imperial Pencil Tracing Cloth..... 86
Industrial Brownhoist Corp..... 88
International Harvester Corp. (truck)... 53
Intrusion Prepakt, Inc..... 93

Joy Mfg. Co..... 69

Lehigh Portland Cement Co..... 96
LeRoi Co. 72
Lippmann Engr. Works..... 104
Lone Star Corp..... 20

Mack Trucks Inc..... 44
Madesco Tackle Block Co..... 98
Manitowoc Shipbuilding Inc..... 112
Masonite Corp. 67
Masonry Resurfacing & Constr. Co..... 112
Master Builders Co.....3rd Cover
McCulloch Motors Co..... 74
McConnaughay, K E..... 50
McKiernan Terry Corp..... 86
Moretrench Corp. 88
Murphy Diesel Co..... 1

National Supply Co..... 77
Neenah Foundry Co..... 97
Northwest Engr. Co..... 3

Omark Industries 91

Peerless Pump Div. Food Mchy & Chem. Corp. 49
Pennsylvania Drilling Co..... 88
Phoenix Bridge Co..... 86
Post Co., Frederick..... 73

Ramset Fasteners Inc..... 70
Republic Steel Corp.....58, 59
Roebling's Sons Corp., John A..... 33
Ryerson & Sons Corp., Jos. T..... 16

St. Paul & Tacoma Lumber Co..... 48
Seaman Gunnison Corp..... 113
Servicised Prod. Co..... 83
Smith Co., S. Morgan..... 68
Smith Engr. Works..... 13
Soapstone Duct Co..... 92
Sparling Meter Co..... 94
Spencer White & Prentis Inc..... 56
Standard Dry Wall Products..... 80
Sturdevant Co., P. A..... 127
Superior Lidgerwood Mundy Corp..... 86
Symons Clamp Mfg. Co..... 2

Tapecoat Co. 52
Texas Co. 4, 5
Thew Shovel Co..... 9
Thor Power Tool Co..... 99
Timken Roller Bearing Co.....4th Cover
Townsend Co. 111

U S Rubber Co..... 12
U S Steel Corp.....6, 7

White Co., David..... 10
Worthington Corp. 14, 15

Professional services 126

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 118
Educational 122
Proposals 114-118
Equipment
(For Rent, Sales Wanted)..122-126

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member

Number of copies of this issue printed 73,870

D. S. Robertson, Advertising Manager
D. J. Cassidy, Business Manager

ADVERTISING REPRESENTATIVES

New York, 36—330 W. 42 St.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

Philadelphia, 3—17th and Sansome Sts.,
D. G. Jensen

Cleveland, 15—Hanna Bldg.,
E. E. Duff, Jr., P. P. DiToro

Detroit, 26—Penobscot Bldg.,
J. A. Houghton

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler

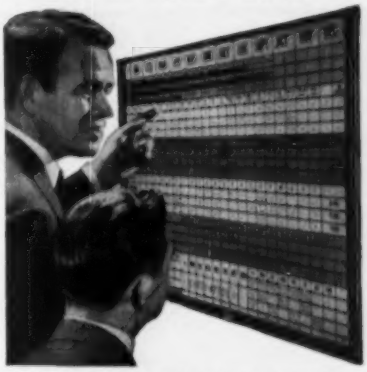
Atlanta, 3—Rhodes-Haverty Bldg.,
W. D. Lanier

Dallas, 2, Adolphus Tower Bldg.,
G. Jones, D. C. Billian

OTHER SALES OFFICES:

Pittsburgh, 22—919 Oliver Bldg.,
Boston, 16—350 Park Square Bldg.,
London, McGraw-Hill House

How To Get Things Done Better And Faster



BOARDMASTER VISUAL CONTROL

- ☆ Gives Graphic Picture—Saves Time, Saves Money, Prevents Errors
- ☆ Simple to Operate—Type or Write on Cards, Snap in Grooves
- ☆ Ideal for Production, Traffic, Inventory, Scheduling, Sales, Etc.
- ☆ Made of Metal Compact and Attractive. Over 60,000 in Use

Full price $49.50 with cards

FREE 24-PAGE BOOKLET NO. R-50 Without Obligation

Write for Your Copy Today

GRAPHIC SYSTEMS

55 West 42nd Street • New York 36, N. Y.

Over 85% of the torque wrenches used in industry are

STURTEVANT TORQUE WRENCHES

Read by Sight, Sound or Feel.

- Permanently Accurate
- Practically Indestructible
- Faster—Easier to use
- Automatic Release
- All Capacities

in inch grams...inch ounces...inch pounds ...foot pounds (All sizes from 0-6000 ft. lbs.)

Every manufacturer, design and production man should have this valuable data. Sent upon request.

P. A. STURTEVANT CO.

The Grand Plan Becomes a Big Job

No congress ever exhibited better statesmanship than this one in its development and passage of the Federal Aid Highway Act of 1956. Casting aside all temptations toward partisanship, focusing unwaveringly on the nation's welfare and promptly compromising all conflicts of viewpoint, the 84th Congress opened a gate to highway progress that could only have remained closed at great peril to the country's economic growth and national defense. That Congress recognized this and gave the nation a highway program commensurate with its needs deserves nothing but praise.

By passing the highway bill Congress also gave the engineering profession and the construction industry a truly big job—actually not too far removed in size from that envisioned in President Eisenhower's original "grand plan", which, it will be recalled stemmed from a study showing that $101 billion needed to be spent on new highways in the next decade. This fact may be overlooked because the figure used with the highway bill is only $32.5 billion. But this figure, it should be noted, represents only part of the job—the interstate system and just three years of expenditure on the remaining federal aid system—with no coverage of the vast network of state and local roads and streets.

To get an idea of the real size of the job, the federal aid road expenditures need to be extended to 13 years and the expenditures for the same period on state and local roads and streets added in. Thus if state and local governments may be assumed to spend only at their current rate of about $4 billion annually, their 13-year total is $52 billion. Add to this an annual federal aid contribution of about $850 million, and this 13-year total is $11 billion. And finally there is the $25 billion of federal funds for the interstate system.

Adding $52 and $11 and $25 billion gives an $88 billion program—not too far removed from the original grand plan. And even though it extends over a 13-year period instead of the originally proposed 10, the program at $88 billion is conservatively estimated since state and local expenditures are more apt to rise than remain at current levels.

The challenge in such a program is plain. Over the past decade we have spent less than $30 billion on road construction. In the 13 years that lie ahead three times that amount is on the schedule. It is a task without precedent, a truly big job that must be done wisely and well—in the same spirit that Congress acted to make the job possible.

A Commendable Pollution Law

A permanent water pollution control statute is now a law of the land. The first such law, enacted in 1948 as P.L. 845, has expired and has been replaced. This new law is basically an excellent measure, and all those who influenced and helped shape it can take pride in the fruits of their efforts.

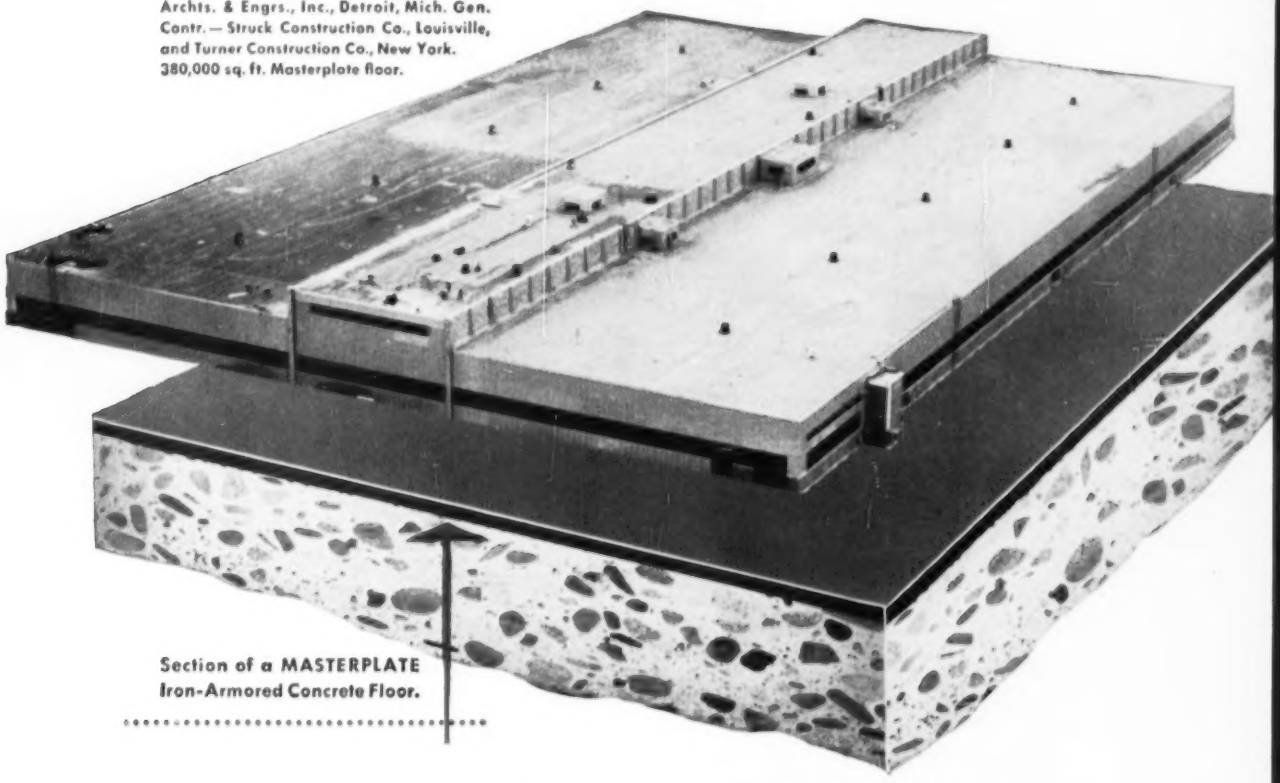
Federal enforcement provisions of the law are an improvement; they have teeth, yet state control is not sacrificed. Provisions for federal assistance to state and interstate water pollution abatement agencies are soundly based on the logical assumption that these agencies can use the money to good advantage. Investigations, research and training all will benefit from enhanced federal support.

The only questionable provision is authorization of $50 million a year for 10 years as grants-in-aid to cities for sewage works construction. However, as finally written (ENR July 5, 1956, p. 28), even this aid idea shapes up to something that optimistically can be presumed workable. It is hoped it will be made quite effectively workable as a stimulant to construction of needed sewage works by those smaller communities which cannot now reasonably afford to build. It is also hoped that the states will handle their considerable responsibility in the administration of this aid in such a way as to accomplish two things: available funds must go only to those cities which need them most; cities not to receive funds must be informed as promptly and positively as possible to proceed on their own with no procrastination in hopes of future aid.

Much of what is good about the final bill as it pertains to federal aid is quite in line with opinions of the experts in this field as elicited in a conference called by ENR last month for the purpose of getting these valued views quickly before its readers and the Congress. In editorial comment on that conference (ENR June 7, p. 180) it was pointed out that the experts were not unalterably opposed to federal aid—if a formula could be found to channel aid exclusively to cities faced with unreasonable costs, while denying aid to others who do not need it.

Now, if, as the editorial further suggested, the Public Health Service will "collect information from the states on the financing ability of all their communities now under order to construct sewage plants," the groundwork will be laid for effective handling of the federal financial assistance. A more perfect federal-aid formula could have been written if more time had been devoted to the task. But it is gratifying that the aid provision wound up to be as sound a piece of legislation as it did.

General Electric Appliance Park Warehouse, Louisville, Kentucky. Albert Kahn, Associated Archts. & Engrs., Inc., Detroit, Mich. Gen. Contr. — Struck Construction Co., Louisville, and Turner Construction Co., New York. 380,000 sq. ft. Masterplate floor.



Section of a MASTERPLATE Iron-Armored Concrete Floor.

another General Electric Facility with a MASTERPLATE floor

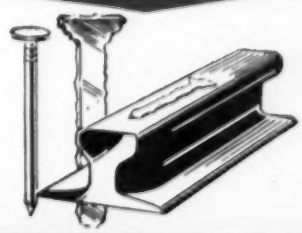
General Electric's decision to install a Masterplate-surfaced floor in this giant warehouse was the result of their need for a hard, non-dusting floor. Their experience with Masterplate floors in other plants was favorable.

Time and time again Masterplate floors are installed in plants of the same owner, because they help maintain a smooth flow of production, reduce maintenance expense, and improve safety.

With Masterplate you get an "iron-clad" concrete floor with its important advantages . . . . 4—6 times more wear-resistant than the best plain concrete floor, non-dusting, corrosion-resistant, easy-to-clean, non-slip and sparksafe.* Non-colored and colored.

Full information and Masterplate "see-for-yourself" demonstration kit on request.

*Static-disseminating, spark-resistant floors are produced with DPS Masterplate.



Basic principle of MASTERPLATE

You know what happens to a nail on the railroad track—it doesn't fracture or crumble; it merely flattens, retaining the same general shape. This is the basic principle of Masterplate. Because of its ductility, Masterplate, unlike brittle material, "gives" under impact, producing a floor with great wear resistance.

the MASTER BUILDERS co.

Division of American-Marietta Company

Cleveland 3, Ohio — Toronto 9, Ontario Cable Address, Mastmethod, N.Y.

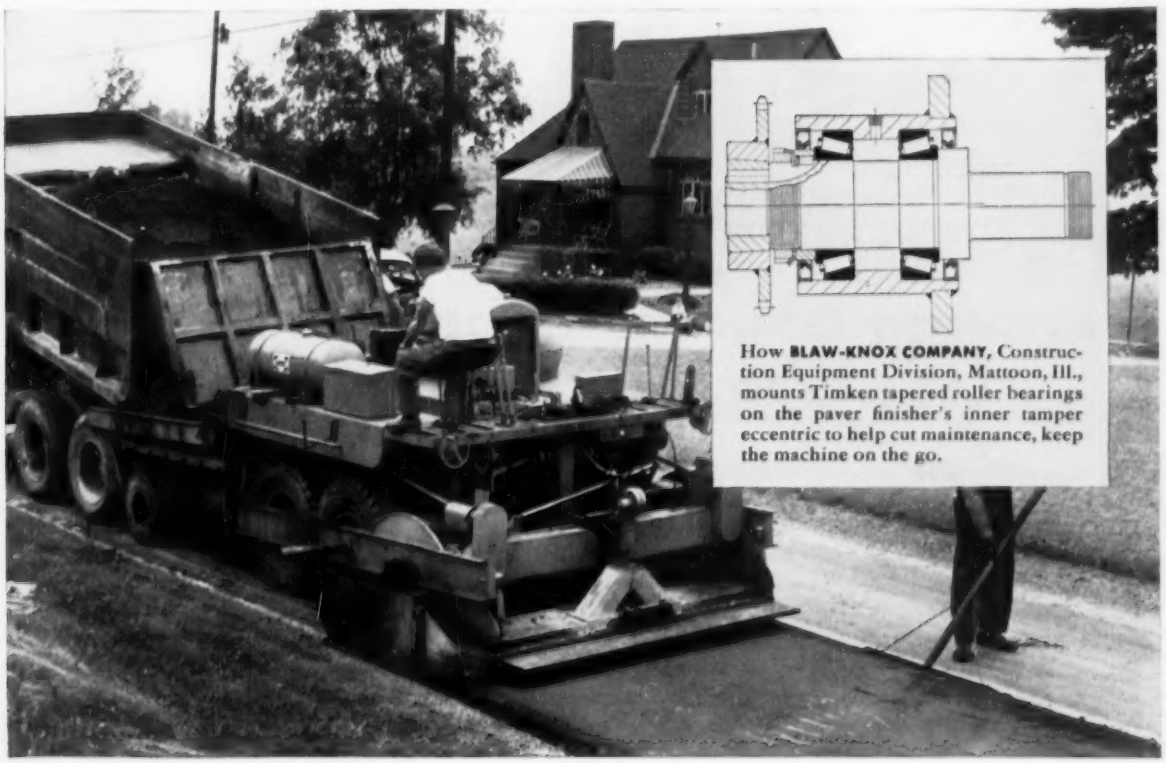
91 TIMKEN® bearings help paver finisher lay "black top" faster, cut downtime

THE first rubber-tired paver finisher to have a floating screed combined with a tamper, this 12¾-ton Blaw-Knox unit lays 10 tons of black top at speeds up to 55 feet per minute. Shock loads are heavy and constant. To take these destructive loads and prevent costly breakdowns, Blaw-Knox uses *91* Timken® tapered roller bearings in these highly important locations: power take-off clutch, transmissions, differential axle, wheels, tamper and tamper drive, conveyor idler, auger drive and control mechanisms.

Timken bearing rollers and races are case-carburized to provide a hard, wear-resistant surface over a tough, shock-resistant core. Because of their tapered construction, Timken bearings take *both* radial and thrust loads in any combination. And full line contact between rollers and races gives Timken bearings extra load-carrying capacity. They keep the machine operating smoothly, minimizing wear and keeping adjacent parts operating at top efficiency. Timken bearings last longer, need less maintenance.

Easy bearing adjustability permits maintaining original clearances. To be sure of the finest bearings, we even make our own steel. We're America's only bearing manufacturer that does. All these advantages are yours when you specify Timken bearings for the machines you buy or build. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **BLAW-KNOX COMPANY,** Construction Equipment Division, Mattoon, Ill., mounts Timken tapered roller bearings on the paver finisher's inner tamper eccentric to help cut maintenance, keep the machine on the go.

DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

Only Timken tapered roller bearings have these advantages: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. Timken fine alloy steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ◊ AND THRUST —○— LOADS OR ANY COMBINATION